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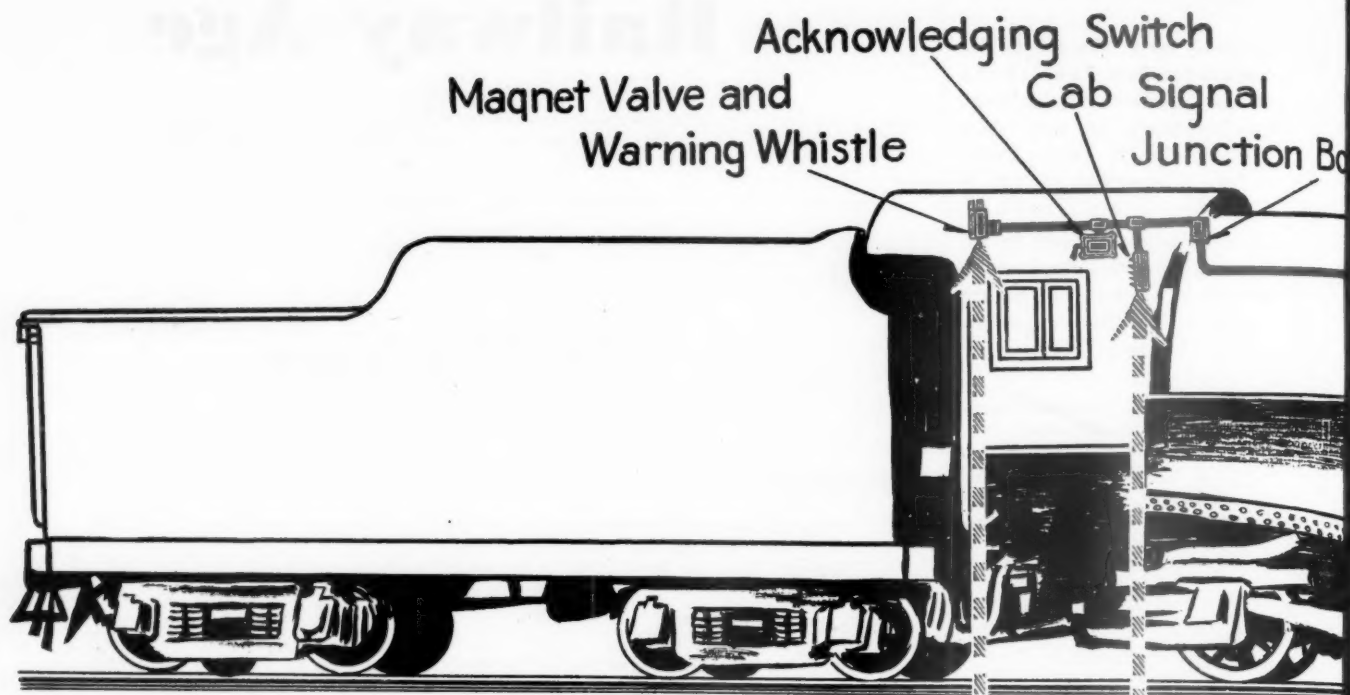
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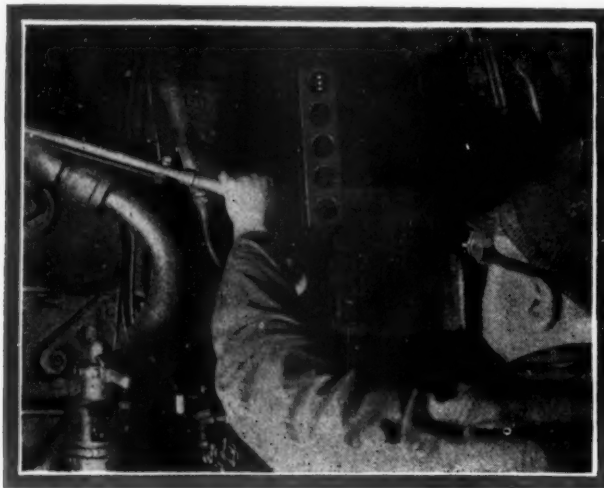


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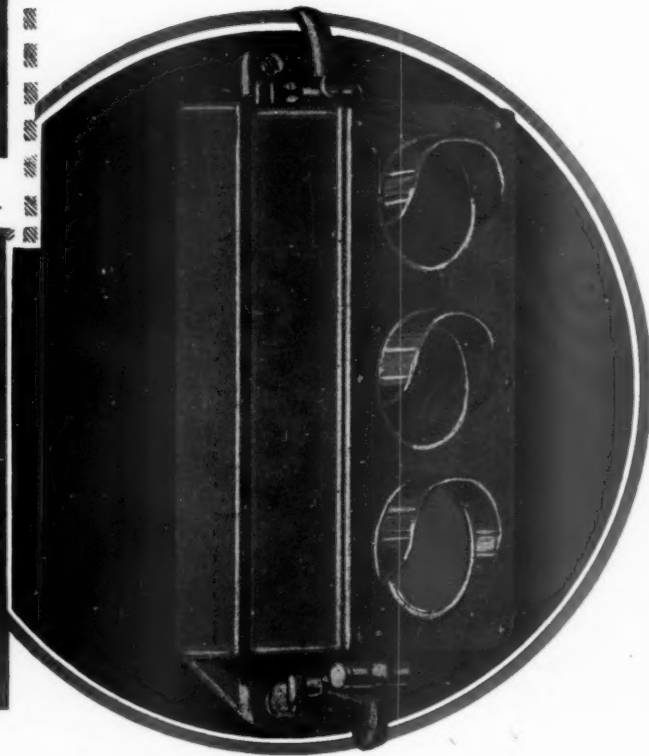
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Problems That Are Fundamental

When the country was prosperous, or apparently so, it was possible to get only few to heed the accumulating evidence that the American democracy, through its national and state governments, was steadily making more and more of a failure in dealing with its problems of transportation because of its disregard of every sound principle of economics and fairness in its treatment of the railways. Meanwhile our governments were more and more applying in other fields policies similar, in their stupidity and disregard of inevitable consequences, to those applied in the field of transportation. Such policies as we were applying in the field of transportation have a fatal tendency to multiply and get themselves applied in other fields.

Now the nation is feeling the full effects of its transportation and other equally stupid policies. The railways, the railway equipment and supply manufacturing industry, and their employees are suffering the most because they were the first victims and have been the worst treated. All industries and their employees finally and inevitably have fallen victims of these policies, however, with the result that we are passing through a depression which has resulted in a destruction of property values, losses of income, unemployment and suffering far exceeding any which the American people ever experienced before.

No student of the subject questions that great mistakes, and even crimes, in the conduct of private business have contributed to the depression. The railway situation in the United States and its causes are, however, an illustration and demonstration that many industries and their employees are suffering more intensely from mistakes in government than from mistakes in business. Never in the one hundred years of its history has the American railroad industry been financed so conservatively and managed so honestly, efficiently and public-spiritedly as during the last 20 years, and especially during the last 10 years, and yet, nevertheless, it is of all our industries, the worst victim of the debacle.

Brookhart and the Railways

With conditions so bad it is possible to get many to believe, now, what so few would believe three years ago, that for a long period of years we, as a people,

have been making mistakes that have been absolutely fundamental—that go down to the very roots of our system of capitalism in business and of democracy in government. Our first great experiment with government intervention in business was made in the railroad industry. The present railway situation shows that that experiment is a dead failure. Can we reasonably hope, in view of its failure thus far in dealing with this great economic problem, that American democracy will show enough brains and fairness to deal successfully with this and other great national economic problems in future?

Smith Wildman Brookhart is a demagogue of extraordinarily little intelligence and ability. Was or was not his recent defeat in Iowa for re-nomination for United States senator an event of real significance? No other member of the Senate ever owed his election and re-election so largely to the constant reiteration year after year of the most reckless misstatements regarding the financing, management and earnings of the railroads or any other industry. When he first ran for senator in 1922, and even when he was re-elected in 1926, he owed his success principally to the votes of farmers and railway employees, both classes of whom, for different reasons, were receptive to his diatribes against the railways, which were premised principally upon the claim that, under the Transportation act, they were "guaranteed" a net return based upon a valuation seven billion dollars in excess of their true value. He was a product of the primary system of nominating and electing public officials. It is inconceivable that he ever could have secured nomination under the old convention system, or election by a state legislature.

He was nominated and elected, not because anybody ever suspected him of having ability, and in spite of the fact that he offered no constructive program for improving government policies or economic conditions, but entirely because he expressed in the most extreme language the misconceptions and prejudices of certain classes regarding economic matters in general and the railroads in particular. If they hoped for anything from him, it was that he would injure the railroads and "malefactors of great wealth" enough to benefit them. Present conditions would support an argument

that he did as much injury as those who voted for him hoped; but an examination of their own pockets would hardly convince them that he got for them any of the benefits that they may have expected.

How We Get Such Statesmanship

Whether owing to the primary system or not, it is a fact that since the primary system was adopted both houses of Congress, and especially the Senate, have undergone rapid degradation until their membership is largely composed of men of the Brookhart type who know almost nothing that is so, who have not a constructive idea, and whose conception of statesmanship is to appeal to the worst prejudices of the American electorate against railroads and other large industries and to raid the public treasury to get money to distribute in one form or another among their constituents. The same kind of statesmanship which has ruined the railroads and caused enormous increases in the expenditures of the federal government is responsible for the crushing increase in the expenditures of, and the taxes levied by, the local and state governments. The railways, it may be said, have been regulated by the Interstate Commerce Commission, and what effect has this kind of statesmanship had on their regulation? The answer is, that the grossly unfair and destructive policy that has been followed by the commission has been largely due to its fear of the incompetents and radicals in the Senate, by which appointments to the commission must be confirmed. The members of the commission should have shown more fairness, intelligence and courage; but it is highly probable that if they had the re-appointments of more of them would have failed of confirmation.

It is all very well to abuse the politicians, little and big, but the plain fact is that the American people, directly and indirectly, have mainly brought upon themselves the conditions from which they are now suffering. They destroyed our original form of representative government by adopting the primary system of nominations and elections, and then, by fully one-half of them not voting at all, and most of the other half voting for men who were incompetent or worse, they have themselves caused adoption of the policies that have ruined the railroad industry and brought about the enormous increases in government expenditures and taxation which now threaten to engulf all industry and commerce. Railway labor leaders and employees, by supporting men of the Brookhart type, have contributed their full share toward putting the railroad industry in its present condition and throwing more than a half million railway men out of work. The returns from Iowa indicate that a large part of the railway employees of that state showed their repentance of their previous folly by voting against Brookhart at the recent primary. Let us hope that this is an indication that railway employees generally are awakening at last to a realization that they are not traveling the road to prosperity for themselves when they follow men who carry on propaganda and pro-

mote government policies for the destruction of the industry upon which they rely for employment.

What Business Men Have Wrought

Too much, however, could easily be said about the extent to which farmers, workingmen and politicians have contributed toward bringing about present conditions, and too little about the extent to which business men have contributed toward it. Business men as a class have not been any more fair, intelligent and public spirited in dealing with the great government and economic problems of the nation than any other class. They are now viewing with alarm the condition of the railroads, denouncing excessive government interference in business, and holding mass meetings to criticize the politicians and demand reductions of government expenditures and taxation. During the entire period when the government was putting the screws of regulation on the railways, however, many of these same business men, in their own supposed self-interest, were helping to tighten the screws.

The National Industrial Traffic League, composed of the traffic managers of large industrial and commercial concerns and associations, for years followed leaders of precisely the Brookhart type, and contributed as much as any other organization to creating the regulation of railways and the unfair government discriminations against them which have so largely caused the present railway situation. Business men have declaimed against doles for farmers and workingmen, but have encouraged and advocated the vast unproductive expenditures on highways, waterways and other public works, which, in such large measure, have loaded down our governments with their present overwhelming indebtedness. Many of them could see no limit to the expenditures the governments should make if they would yield them orders or contracts, or, perchance, enable them to get their freight hauled largely at the cost of the taxpayers. Many, while vociferously denouncing the politicians, are still advocating government expenditures unwarranted under present conditions but which they hope would yield them contracts or subsidies in one form or another.

At the Parting of the Ways

The American people are at the parting of the ways. They can decide to go on increasing government interference with business, government expenditures, and taxation intended to "soak the rich", until they will destroy the national wealth and reduce themselves to general penury. On the other hand, they can restore a representative system of government, reduce the activities of government, abolish doles and subsidies, reduce unproductive expenditures of public money, release the energies of private capital and enterprise, and enjoy greater prosperity than they have ever known. To predict with assurance which course they will adopt, in view of developments within recent years, would be foolhardy. The people must have leadership by the outstanding men in the professions and in busi-

ness if present problems of government and economics are to be solved, and when such men quit thinking and acting with an almost exclusively selfish regard to their own private interests and take the leadership in public affairs out of the palsied hands of the Brookharts and Garners we will begin to make some progress in solving those problems which must be solved if employment, income and wealth are going to increase again as they did in the 150 years during most of which we had representative government and real leadership in government and in business.

What Kinds of Ties Are Wanted?

In the past when criticism has been directed towards the quality of crossties accepted by some roads, the defense usually offered has been that it was impossible to secure better grades. At present, however, potential production so far exceeds demand that this argument no longer holds true. Rather, with conditions as they now are, any road can readily secure the quality of ties that it wants in any quantity that it desires and the ties that it is accepting may fairly be taken as an indication of the standard which it has set up for itself.

In the light of this premise, an investigation of the practices of the various roads reveals much of interest. The most striking observation is the marked improvement that is taking place in the quality of the ties that are being accepted. This trend is widespread. It is particularly pronounced on certain roads, indicating an awakening on the part of their managements to the importance of tie quality as a means to maintenance economy.

Equally noticeable and more disconcerting, however, is the continuing laxity on certain other roads. Failure to grade ties accurately as to the dimensions set forth in the specifications, acceptance of poorly hewn ties or of knotty timber, etc., encourage carelessness in workmanship and the cutting of inferior trees. These and other evidences of lax inspection that are still to be found in some quarters indicate that some railway men do not yet appreciate the superior value of ties carefully made from sound timber. That any departure from the specifications is unnecessary at the present time is demonstrated by the numbers of acceptable ties that are being brought out, not infrequently in the same yard with ties still markedly deficient.

These lapses are creating a problem for the vast majority of the roads which are endeavoring conscientiously to enforce the specifications. When followed by commercial producers, with the correspondingly lower costs of production, these deviations from the specifications as to size or quality of timber lead to destructive competition, with resulting "chiseling"

of the prices of other producers, tending to force them to depart from the specifications and breaking down the standards of the entire industry.

At a time like the present when the buyer is so definitely in the saddle, it would appear opportune to make strict compliance with the specifications in all respects so universal that there will be no tendency to break away when the demand for ties again increases and conditions become more difficult to control. If roads which still condone laxity in inspection would appreciate how unnecessary this practice now is, how it detracts from the quality of the ties which they are today securing and further how it makes strict enforcement of the specifications more difficult by other roads, they would fall into line. It is possible that such laxity as remains today is in part the result of deliberate policy on the part of the managements. It is more probable however, that it is the result of the failure of the managements to give sufficient attention to the practices on their own roads. The amount of money spent annually for crossties and the effect of tie quality on tie life are sufficiently important to warrant executive, purchasing and maintenance of way officers alike checking the practices on their own roads to see whether they are all they should be.

Supreme Court on Motor Vehicle Control

The Supreme Court of the United States, in its decisions sustaining the constitutionality of features of the motor vehicle regulatory and tax laws, respectively, of Texas and Kansas, has laid a broad foundation upon which can be erected the motor carrier regulation and tax laws of the future. In two decisions, the Supreme Court has defined the principles which must be observed by state legislatures in their attempts to deal with the problem of protecting the public interest in the face of ruinous exploitation of the public highways for private gain, and it has shown that the public interest can legally be protected.

In its two decisions, the Supreme Court, broadly speaking, has held that it is for the state to decide what use shall be made of its highways, and how they shall be paid for. Incidentally, the court has had occasion to upset some of the favorite arguments of those interests which have fought for years for what they consider their right to use public property as they see fit—arguments which would have it that the state is powerless to act in the interests of the people. The old charges of deprivation of property without due process of law, undue interference with commerce, and discrimination between carriers—charges which have successfully delayed the enactment of proper regulation of the private users of public property—have been dealt a mortal blow.

Can the states legally determine how their highways shall be used? In the Texas case, the charge was made that the limitation of the net load on trucks to 7,000 lb. is an arbitrary regulation, depriving certain truck operators of their property without due process of law. Concerning this, the court said:

In exercising its authority over its highways, the state is not limited to the raising of revenue for maintenance and reconstruction, nor to regulations as to the manner in which vehicles shall be operated, but the state may also prevent the wear and hazard due to excessive size of vehicles and weight of load. Limitations of size and weight are manifestly subjects within the broad range of legislative discretion.

The Supreme Court answered as follows the allegedly scientific contention of motor vehicle interests that limitation of weight is opposed to "sound engineering opinion":

To make scientific precision a criterion of constitutional power would be to subject the state to an intolerable supervision, hostile to the basic principles of our government and wholly beyond the protection which the general clause of the fourteenth amendment was intended to secure.

Can the states legally apply the same restrictions to vehicles operating in interstate commerce as they apply to vehicles moving intrastate? On this question, the court held:

In the absence of national legislation especially covering the subject of interstate commerce, the state may rightly prescribe uniform regulations adapted to promote safety upon its highways and the conservation of their use, applicable alike to vehicles moving in interstate commerce and those of its own citizens. In the instant case, there is no discrimination against interstate commerce, and the regulations adopted by the state fall within the established principle that, in matters admitting of diversity of treatment, according to the special requirements of local conditions, the states may act within their respective jurisdictions until Congress sees fit to act.

Considering Effect on Railroads

Can the states legally act to preserve in full vigor the transportation facilities which have served them well and which are still admittedly indispensable? With respect to the charge of discrimination—under the provision of the Texas law allowing larger loads on trucks moving only to the nearest receiving station of a common carrier—the Supreme Court held:

The legislature, in making its classifications, was entitled to consider frequency and character of use and to adapt its regulations to the classes of operation which, by reason of their extensive as well as constant use of the highways, brought about the conditions making the regulations necessary. It is said that the exception was designed to favor transportation by railroad as against transportation by motor truck. If this was the motive of the legislature, it does not follow that the classification as made in this case would be invalid. The state has a vital interest in the appropriate utilization of the railroads which serve its people, as well as in the proper maintenance of its highways as safe and convenient facilities. The state provides its highways and pays for their upkeep. Its people make railroad transportation possible by the payment of transportation charges. It cannot be said that the state is powerless to protect its highways from being subjected to excessive burdens when other means of transportation are available. The use of highways for truck transportation has its manifest convenience, but we perceive no constitutional grounds for denying to the state the right to foster a fair distribution of traffic, to the end that all necessary facilities should be maintained and that the public should not be inconvenienced by inordinate uses of its highways for purposes of gain.

Can the states legally require those who benefit from the expenditure of public money for improved highways to pay for the privilege in proportion to

their use of the highways? In its decision sustaining the Kansas law—which requires common, contract and private motor carriers to pay a tax of one-half mill per gross-ton mile in addition to license fees—the Supreme Court quoted approvingly from the decision of the district court as follows:

The State of Kansas has constructed at great expense a system of improved highways. These have been built in part by a tax on gasoline sold in the state and by license fees exacted of all resident owners of automobiles. These public highways have become the roadbeds of great transportation companies which are actively and seriously competing with the railroads which provide their own roadbeds; they are being used by concerns for the daily delivery of their products to every hamlet and village in the state. The highways are being pounded to pieces by these great trucks which, combining weight with speed, are making the problem of maintenance well-nigh insoluble. The legislature but voiced the sentiment of the entire state in deciding that those who daily use the highways for commercial purposes should pay an additional tax.

In this connection, the Supreme Court held:

Requirements of this sort are thoroughly within the authority of the state, which may demand compensation for the special facilities it has provided, and regulate the use of its highways to promote the public's safety. Reasonable regulations to that end are valid as to intrastate traffic, and, where there is no discrimination against the interstate commerce which may be affected, do not impose an unconstitutional burden upon that commerce. Motor vehicles may properly be treated as a special class because their movement over the highways, as this court has said, "is attended by constant and serious dangers to the public and is also abnormally destructive to the highways themselves."

Decisions Will Promote Co-ordination

The Texas and Kansas laws, so sweepingly sustained by the Supreme Court of the United States, avoid the faults which have rendered ineffective the somewhat similar laws previously passed in other states. In many respects they are models which other states can well afford to copy. That other legislatures, similarly awake to the menace created by the unbridled exploitation of the public highways, will see fit, and soon, to take similar steps in their own states, is very probable. One state, Louisiana, is already considering identical legislation.

What will be the effect of the approval of the Texas and Kansas laws by the Supreme Court, and the probable enactment of similar regulatory and tax laws in other states? Is the much-discussed "throttling" of motor transportation in prospect? Far from it. The Texas law puts a firm brake upon the steady movement toward bigger and heavier truck units, vehicles designed to afford "cheap" transportation to the shipper without thought of the ultimate cost to the public. The Kansas law provides for the payment of part of the cost of highway construction and maintenance by those who are benefitting in their pocket-books from the existence of the highways. Under these two laws, an approach is made toward the situation wherein commercial transport on the highways will truly pay its way. At that juncture, there will be a basis for sound co-ordination of railway and highway transportation, trains and trucks will engage in the distinct kinds of work for which they are best fitted, and the public will benefit, not suffer, from the availability of the type of transportation which can be provided only by the truck.

What Modern Locomotives Can Do for American Railroads

A satisfactory expense level requires systematic replenishment of the locomotive inventory—Larger charges for depreciation, if used for replacements, can be saved in repairs

By Robert S. Binkerd

Vice-president, The Baldwin Locomotive Works

ONE of the outstanding contributions of recent years to our knowledge of railway economics is the establishment of the fact that there is an inexorably rising cost of repairs with the increasing physical age of the locomotive. Fleets of locomotives have had their repair costs analyzed for a series of years. Regardless of the type of locomotive, type of service or territory in which they are operated, they all show the same curve of rising costs. Good shop management may hold down the level, but is powerless to affect the rate of progression on that level. Between the first and third year the cost doubles. Between the third and twenty-fifth year it doubles again, and from the third year on there is an average annual increase of approximately 3.69 per cent, as illustrated in the accompanying chart.

It follows that under normal conditions a locomotive can be scrapped at the end of its twenty-first year and a new duplicate paid for out of savings in the cost of repairs that would otherwise be spent upon the supplanted locomotive during the ensuing 21 years. In other words, if there were no improvement in the locomotive art whatever, each 21-year-old locomotive could be supplanted by a new duplicate at no increase in cost.

But exact duplicates of 21-year old locomotives are practically never purchased. A new locomotive has the advantage of increased steam pressure, increased superheat, increased tractive force and increased boiler and firebox, resulting in the ability to turn out many more revenue ton-miles or revenue passenger-miles per locomotive hour and per pound of coal and water.

These additional savings reduce the time required to pay for the new locomotive from 21 years to ten, eight, six or four years. If, to the purchase of new power, is added operating policies which result in making the new locomotive perform from 5,000 to 10,000 miles per month, conditions are sometimes created where entire fleets of locomotives pay for themselves in a single year and continue to pay for themselves over and over again for years thereafter.

In connection with switching and road service in light density territory, gas-electric locomotives will frequently pay for themselves in from one to three years. The operating officers of a single medium-size Class I railroad recently estimated that there were 39 places on the line where such locomotives would pay for themselves in not more than three years.

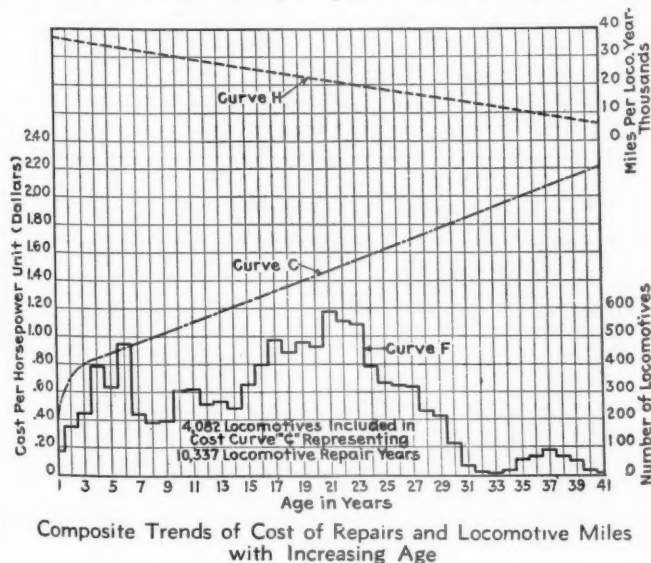
The operating expenses which revolve around the locomotive are the largest single element in the cost of producing transportation. For the four years from 1926 to 1929 inclusive, the Class I railroads averaged the following expenditures on the following locomotive accounts:

	000 omitted	Per cent of total operating revenues	Per cent of total operating expense
Repairs	\$431,380	6.9	9.5
Fuel and electric power.....	381,443	6.1	8.4
Engine crews.....	325,430	5.2	7.2
Enginehouse expense.....	107,412	1.7	2.4
Depreciation and retirement charges	63,362	1.0	1.4
Water	25,884	0.4	0.6
Maintenance of fuel and water stations	15,177	0.2	0.3
Lubricants	8,813	0.1	0.2
Miscellaneous supplies.....	7,378	0.1	0.1
Total	\$1,366,279	21.7	29.9

To the above should be added that the size and speed of locomotives largely determine the number of train movements necessary to carry a given amount of traffic. In so doing the locomotive largely regulates the amount of compensation which must be paid to train crews as distinguished from engine crews. Taking this into consideration, the total costs effected by the locomotive constitute more than one-third of all railway operating expenses.

The expenses revolving around the locomotive, moreover, are the one group which is almost completely under the control of railroad management. It is, therefore, the field in which the highest results should be achieved within the shortest possible space of time. As a result of numerous studies on specific properties, as well as study of the general situation, we are convinced that here at least from \$300,000,000 to \$400,000,000 can ultimately be taken out of locomotive operating expense and added to net operating income.

The mechanism for controlling the repair and oper-



ating expense of locomotives is the capital investment policy which dictates the intake of new power at the top of the inventory and the scrapping of old power from the bottom. From the facts set forth in the early part of this statement, obviously the turnover should not be less than once in 25 years. It could more profitably be set at once in every 20 years. Under such a program repair costs could easily be held permanently at a level not higher than two-thirds of that to which the railroads are now accustomed, and there would be radical reductions in the cost of fuel, crews, water, terminals and incidentals.

Indeed, it is impossible to estimate with precision all the economies that would follow from the wholesale supplanting of physically old or economically obsolete locomotives with new locomotives properly designed for the service to which they are applied. However, not only can all of the above economies be effected, but there can also be a radical reduction in the total number of locomotives required to protect a given volume of service. And, since locomotive inspections required under the Interstate Commerce Rules take probably 30 days of each locomotive year, each time a locomotive inventory is reduced by 100 units, there is a further complete saving of the investment and servicing of at least eight additional locomotives. There are further savings in taxes and insurance. There is a further economy in the required capital investment in cars, since a smaller number of cars handled by such locomotives will produce the necessary number of car-miles of transportation. Longer runs by fewer locomotives also simplify and reduce the investment in shops, machinery and enginehouses necessary to maintenance and operation.

There is no field open to the railroads today in which a dollar of wise investment will go further to reduce operating expenses and to shrink non-productive investment, thereby increasing railroad net operating income and reducing the total investment on which a return must be earned.

Old Locomotives Physically Unfit for Modern Service

These results cannot be produced by any program of so-called "modernization" of physically old or economically obsolete power. The outstanding difference between truly modern locomotives and those of only a decade ago is in the sustained hauling capacity of the modern locomotive at speed. This is the product of the horsepower of the boiler, which is produced by designs which utilize practically all of the allowable

weight and clearance for boiler and firebox capacity. The addition of every modern improvement to older locomotives designed to operate at slower speeds could never make them the motive power fit to handle normal train loads at present and future rates of speed.

Another important difference is the diameter of the driving wheels. The freight power of only a decade ago, and much of only five years ago, had driving wheels from 61 in. to 63 in. in diameter. At road speeds of 25 to 30 miles an hour, they were sufficient. But at road speeds of 50 miles an hour or better, the small diameters of these driving wheels result in excessive piston speeds. These in turn shake the locomotive to pieces more rapidly and raise repair costs something like 50 per cent above normal.

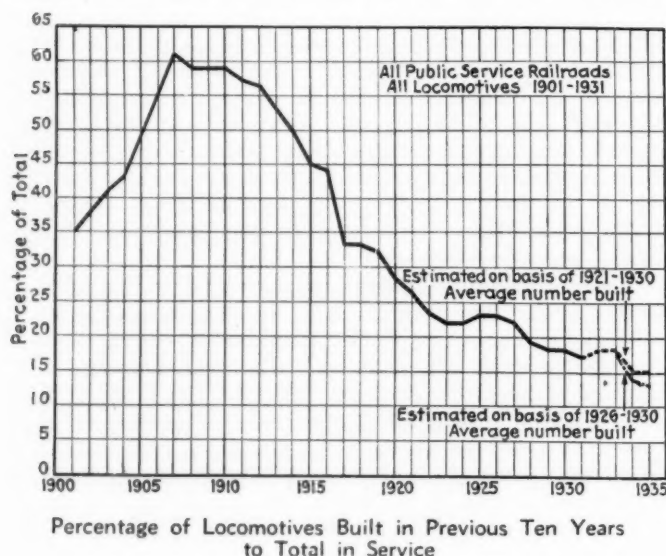
If the hope of the railroads is in speeding up their service and at the same time not losing their fundamental advantage of being able to handle their traffic in much larger unit movements than any other form of transportation, then their ability to realize these possibilities is dependent upon their clear understanding of the economies of modern power and their vigorous appropriation of its possibilities. Only new power specifically designed for modern high-speed service can render such service at costs which will put added earning power back of present and future railroad investment.

Buying High Operating Expenses for the Future

It is frequently stated that, however true the foregoing may be, railroads cannot afford to purchase such power. But the present policy of non-replenishment of the locomotive inventory is simply buying high operating and repair costs for the future, which is also something that the railroads cannot afford to do. The accompanying chart shows the percentage of the inventory, year by year, which was purchased during the preceding ten years. At the end of 1931 the indicated turnover was once in 58 years. If, during the next four years, new locomotives are not purchased more rapidly than they were during the 1920-30 decade, the indicated turnover by 1935 would be once in every 66 years. And, should the rate of purchase be on the low level of 1926-1930, inclusive, the indicated turnover by 1935 would be once in every 77 years.

We all know that at the present moment it would be practically impossible for the railroads to sell bonds or equipment trust certificates to the investing public. But if they can charge \$73,000,000 in a year to the depreciation of their motive power—an obviously inadequate amount—why can't \$100,000,000 a year be charged to depreciation? Why can't at least one half of this charge be treated as a cash renewal fund for new motive power? And, since one-tenth of the original cost of a locomotive is frequently spent on a single Class 3 repair, why can't a substantial part of such expenditures be put into new power instead of being placed upon old power?

In short, sooner or later the railroads must and will spend a substantial amount of money on motive power. To a large degree this may be spent in operating expenses and go to reduce earning power. On the other hand, much of this same money might be spent in the purchase of new power, reducing operating expense and substantially improving earning power. And if some bridge is needed over the gap between the abandonment of the present policy and the realization of the economies of the new policy, what more truly self-liquidating project could be found for assistance in the shape of credits through the Reconstruction Finance Corporation or otherwise?



The Railway Supply Officers Report

Survey of stores operations throughout the country shows many changes to economize and improve service

Taking
Inventory
on the
Pennsylvania



It has been said that the railroads are waging battle on two fronts—one to save their traffic and the other to reduce expenses. Developments in the railway supply work are indicative of some of the progress being made by the railroads in their engagements for economies.

It has already been shown in these columns that within the past twelve months the railroads have reduced their inventories of unused materials and supplies approximately \$70,000,000. However, widespread readjustments in reorganization and many changes in practice also mark the supply work. According to reports received from supply officers in various parts of the country, these changes include the wiping out of departmental lines, the reduction in the number of stores, further centralization of materials, pooling of mechanical and storehouse labor, discontinuance of supply trains and revisions and readjustments in material handling.

Some of these readjustments are obviously being made to meet temporary emergencies, while others clearly show the continued effort of some railroads to enlarge the efficiency of their operations.

Mark Inactive Stock on Canadian National

The Canadian National, under the direction of L. C. Thomson, manager of stores and this year's chairman of the Purchases and Stores division of the A.R.A., has been enabled by close co-operation with the mechanical department to consolidate the clerical work at roundhouse and car-repair points in many cases, thus effecting considerable savings. It has been found possible in a number of cases, Mr. Thomson states, to eliminate the supply car service on branch lines, and, in others, to extend the service from a 30-day to a 60-day basis.

A change of considerable importance has also been made in handling the stock. Where many items of stock are found inactive, the practice has been developed of placing blank red cards in bins containing the inactive items where they remain until there has been some movement in the stock. When checking stocks, the stockkeepers only take record of the uncarded items. In other words, since the red card denotes inactivity, the carded bin is passed. This has eliminated considerable work for the stockkeeper and made it pos-

sible to assign a greater territory to some stockkeepers, releasing other stockkeepers for other work.

Short-Cut Methods on Alton

On the Alton, according to J. F. Marshall, purchasing agent, the purchasing and stores departments, while separated by 127 miles, are connected with company telephone service and, as a result, have been able to effect a considerable saving in the elimination of duplicate records by keeping such records at the point where they are used the most and furnishing the desired information to the other department as requested by telephone.

Further economy is afforded by furnishing the general storekeeper with copies of the purchase orders for use in tracing material, the general store writing direct to the manufacturers. The letters are written on the purchasing agent's letterhead and carry the purchasing agent's name and address, a copy being mailed to the purchasing agent's office for his files. The replies are thus received at the purchasing agent's office and are then referred to the general storekeeper, which saves duplication of work and delay in getting action on shipments.

In addition, requisitions for material from the stores are now priced and classified from bin cards, marked with the latest prices. The prices are applied by stock clerks who are familiar with materials and there is less chance of pricing and classification errors. Reductions in force have been accomplished as a consequence of this change. Supply cars on the Alton are now handled by local trains in place of operating supply trains.

Merge Junction Stores on Boston & Maine

Improvements in practices on the Boston & Maine are described by O. A. Donagan, general storekeeper, in part as follows:

Maintenance of way stores on each division have been eliminated and the materials concentrated at the general storehouse at Billerica with decided economies and, at the same time, with the effect of improving the service to the using department. The office forces of the purchasing agent and the general storekeeper have also been combined, thereby not only effecting economy, but also speeding up the service. Within the last year and a half, through joint agreements with other roads,

the B. & M. has either abolished its store points or taken over the work formerly performed by the other road, enabling that road to abolish its store point. During the last year, passenger car-repair work was transferred from Billerica Shops, Mass., to Concord, N. H., necessitating some additional storehouse space and other storage facilities.

No changes of note have been made in office practices during the past year. However, this road had previously changed from the standard A.R.A. stock books to a simplified stock book sheet providing stock records on each sheet for three years. It has experimented to a limited extent with the Unit Record Car system for keeping stock but, considering its cost, has not felt warranted in adopting this system on an extensive scale. Stationery forms are carefully checked as new supplies are ordered to be sure that the forms are actually needed, or that two or more forms can not be combined into one.

Change Shipping Methods on I. C.

The supply organization of the Illinois Central system has made a series of important changes, according to W. Davidson, general storekeeper. At one time, there were 15 division stores and 1 general store, as compared with 5 district stores and a general store at present, a reduction of 9 supply points. This arrangement of consolidations under the district stores has effected reductions in both stocks and pay rolls. In 1932, the points at which stores accounting was performed were reduced to Memphis and Chicago, which effected a further reduction in clerical forces.

Constant study has been made of the stockbooks in an effort to order materials uniformly and the use of a master stockbook has proved beneficial, enabling the central office to know at all times what material is on hand or surplus before purchasing more. Stationery forms have been consolidated, pricing records improved, and a numbered filing system, installed some years ago, is producing results. A campaign has also been started to eliminate unnecessary purchases of stationery.

With the reduction of maintenance of way forces, supply trains have been discontinued, bringing about a further saving in the operation of trains and pay rolls. Material formerly handled by supply trains is now distributed locally by the district stores. Heavy shipments are loaded in cars, similar to l.c.l. shipments, for delivery to the divisions and are then handled by division forces as well as by train crews.

A study also has been made of the shipments of material to the general as well as the district stores. Orders for material are received from the district stores just prior to the receipt of the material from manufacturers, which has made it possible to handle much of it by transferring it from one car to another the same day that it is received, without placing it in bins.

Considering the low prices offered for scrap, this commodity is not handled more than necessary, most of it being left in one place so that the one operation will suffice when disposing of it. The reclamation of materials has been carefully studied and excellent results have been obtained from the reclaimed materials.

The Great Western Centralizes

On the Chicago Great Western, according to H. C. Pearce, assistant to the vice-president of operation, outside stores have been eliminated incident to the abolishing of divisions, repair points, roundhouses, etc., and centralization work has been effected so that more than 80 per cent of the materials are now furnished from

the general store. In addition, all accounting for materials and supplies, except the pricing, has been consolidated in the accounting department.

While no investments have been made in additional facilities, fairly good tractor and trailer operation has been developed by overhauling equipment that had been discarded. The supply cars on the Great Western are now operated every 60 days instead of every 30 days, while reclamation is confined to immediate needs and care is exercised to avoid spending any money for reclamation unless the work shows a substantial saving over what it would cost to buy new material. Stocks at outside points will be further reduced by establishing a regular and dependable delivery, with the final purpose in view of shipping daily to these points only the materials and supplies they need for current requirements.

Extend Work on K. C. S.

On the Kansas City Southern, according to E. H. Hughes, general storekeeper, no mergers have been made in the organization, but it has been found expedient to eliminate some of the smaller outside stores during the past 18 months and to carry forward a program of reducing line stocks sharply and centralizing the materials at the general store where better control can be exercised. The scope of supply work has been extended to checking and supplying locomotives, handling certain roundhouse clerical work and taking over odd jobs where economies can be effected without detriment to the service.

A two-year stock book has been adopted which will save the cost of stationery and labor in writing each alternate year. These two-year books have now been in use approximately 18 months and are functioning so well that the plan is being continued for 1933 and 1934. Various reports prepared in the office as well as those at the outside points have been carefully examined and eliminations made where possible, and sharp reductions have been made in stationery expense by constantly combing the various forms and their use.

For the past year, supply train work has been practically reduced to operating the oil supply cars, delivering from them, in addition to oil, such items as switch lamp parts, fuses, light globes, seals and a few items that are essential to operation. Shipping methods have also been revised by consolidating shipments, looking towards maximum loading.

Merge Shop and Stores Labor on S. P.

In keeping with the need for economical operation, the stores department of the Southern Pacific in Texas and Louisiana, writes L. B. Wood, general storekeeper, has kept in step with the other operating departments. Store forces have been reduced approximately 48 per cent in the past year, while the material on hand has been reduced approximately \$1,000,000, compared with March, 1931.

The signal and material stores have been centralized at one point, eliminating three divisional signal stores, and a centralized pricing bureau has been established, eliminating six divisional price bureaus. The office of general storekeeper has also been merged with that of the district storekeeper at Houston, abolishing the latter office.

The operation of the supply train has been discontinued temporarily and supply cars are operated every 45 days in its place, these cars, which are in charge of division storekeepers, roadmasters and other maintenance of way supervisors, being handled on local freight trains.

Stores delivery is being maintained at the general stores and the common labor gangs of the mechanical and stores departments have recently been consolidated under the jurisdiction of the stores department with a substantial saving in expense.

"We have made it our policy," Mr. Wood also reports, "to dispose of our scrap periodically, rather than speculate on the scrap market, practically all of the scrap being exported and little difficulty being encountered in disposing of it." Reclamation on a small scale has been extended in the past year to include car oil and packing waste.

Shop Deliveries Cut on C. & E. I.

Heavy reductions in the general storekeepers' forces on the Chicago & Eastern Illinois and radical curtailments in the district stores have been made in the interest of economy, according to J. H. Beggs, purchasing agent. Certain forms have also been changed, various reports eliminated and the accounting work consolidated, and the operation of supply cars has been discontinued temporarily. Deliveries of material to shops by store forces have also been discontinued with the suspension of heavy maintenance work.

Extensive Car Work on Northern Pacific

Aside from making various reductions in forces incident to the depression, supply departments on the Northern Pacific, according to reports received from that road, have been limited to the consolidation of store forces at four points where divisions have been consolidated. It is interesting to note that the supply forces of that road have been busy in supplying the material for a large rebuilding program involving 3,000 cars.

On the Mobile & Ohio, some centralization of stores is being made incident to changes in shop and roadway conditions, and careful attention is being given to the elimination of unnecessary reports and letter writing.

Consolidate U. P. Stores

Notable changes in supply methods, especially in the arrangement of stores, in pricing practices and methods of distributing roadway material have been made on the Union Pacific lines, according to U. K. Hall, general storekeeper. Previously the Union Pacific had division stores on each of five operating divisions between Omaha, Neb., and Salt Lake City, Utah. Four of these have recently been eliminated entirely as shipping stores and are now local stores, handling only the materials used at that point. The Omaha store is now the general store for the entire Union Pacific railroad. Requisitions from all local stores are received at Omaha and shipments made direct to the local points. Omaha is also the general store for the Union Pacific system for certain classes of material.

General stores were also maintained at Pocatello, Idaho, Portland, Ore., and Los Angeles, Cal. Portland and Los Angeles are now local stores and, excepting for materials purchased in the immediate territory, they are supplied from the Pocatello general store, Pocatello becoming the general store for all points on the Oregon Short Line, the Oregon-Washington and the Los Angeles & Salt Lake. Material yards at Grand Island, Neb., and Green River, Wyo., have been discontinued, and all the materials previously handled there are now being stored at and shipped from Omaha.

The office of the general supervisor of stores (now general storekeeper) was combined with the office of the general storekeeper at Omaha (now assistant general storekeeper) and the division storekeeper, Omaha (now storekeeper of the Omaha general store).

Stationery departments have been abolished, the positions of stationery storekeepers on the four units having been discontinued and the work having been organized as one section of the stores department, where the material is located and carried under the direction of a stockman, while the position of stationery buyer was established in the general purchasing agent's office.

On this road, the practice of pricing materials from price books in the accounting office has been changed to the so-called unit or bin pricing. All materials are now being priced from prices posted on the bins or marked on the articles when issued by the stores department material handlers.

The Union Pacific lines previously operated four separate and distinct supply trains—one on each unit of the system. Two trains are now being operated, one on the Union Pacific, operating out of Omaha, and one for all three western lines, operating out of Pocatello, subject to restocking with local purchases at Portland and Los Angeles. All the trains were previously operated as special trains throughout the entire territory, while at the present, where operating conditions permit, the cars are operated in regular revenue trains, although the cars are in charge of a supply-train storekeeper. On the more important branch lines, roadmasters' cars are equipped at the Omaha and Pocatello stores, and assigned to the roadmasters who distribute the materials on the respective branches.

Reduce Stores on Central of Georgia

The supply organization of the Central of Georgia has been changed in a number of respects, J. L. Bennett, purchasing agent, reports, the stores, with the exception of general storehouse at Macon, Ga., have been reduced to substores, and the office work of the mechanical forces at these points has been absorbed by the stores department. Progress has also been made in eliminating stationery forms and the number of material and supply balance sheets has been reduced from four to one.

Thirteen Factors in Erie Progress

An unusually large number of changes have been made in supply practices on the Erie, according to A. L. Sorensen, stores manager. The work of the Standardization committee has been enlarged to include the checking of sources and prices of materials purchased, the information being furnished by division storekeepers, sectional storekeepers, using departments and others, for the purpose of developing more economical sources of supply and putting purchases on a quantity basis.

At several points, the oil-houses and tool-rooms have been combined with the storehouses, reducing the number of employees on either mechanical or stores pay rolls. Similar action has been taken concerning office work at division headquarters. In some instances, the second or third tricks in storehouses, or both, are being handled by engine dispatchers' clerks, foremen, or other responsible representatives.

The use of electric trucks and skids for handling materials is being improved upon by erecting wooden unloading platforms, made from second-hand lumber.

In general, the pricing of requisitions for materials is performed from prices on bin tags applied to the disbursement slips when the material is issued, a practice which has been found satisfactory and economical. These prices are revised by the central pricing bureau and furnished the division storekeepers at least every 60 days. A pay-roll allowance, determined by absolute requirements, is made to each point monthly, and can not be exceeded without authority. A chart,

established at each storehouse, showing material balances, total pay rolls, telephone charges, charges to and from other departments, express charges, etc., has also been helpful in making reductions.

Among other changes is a uniform decimal filing system which has been established in all stores offices. Operating the supply train, generally, in way-freights has proved satisfactory, each part of railroad service being served once every 60 days.

Accounting practices have been changed by eliminating some reports. The installation of tabulating machines in the accounting department absorbed the tabulating work and with a view to increasing the savings of tabulating machines, an automatic duplicating punch is now being installed in the general stores office, to punch cards covering transfers to and from storehouses and divisions, the monthly purchasing invoice list, the record of vouchers passed for the auditor and the distribution of agency claims to primary accounts, etc.

A considerable saving has been made by concentrating the lumber for construction and maintenance of way work and by the reduction of emergency stocks. At present, the stores forces at certain points also fuel the gas and gas-electric motor cars, thereby eliminating duplication in forces.

During the year, numerous studies of scrap-handling costs have been made to determine whether, under the present prices, it is economical to produce certain grades of scrap. The Erie is also purchasing second-hand materials, particularly A.R.A. materials, to the extent procurable.

Changes in California

Supply work on the Pacific lines of the Southern Pacific, according to A. S. McKelligon, general storekeeper, has been marked by the consolidation and reduction of supervision and labor in every possible direction, departmental lines having been virtually wiped out in places. At outside points, the work is done by the forces available, no matter on what pay roll they are carried. At points where the mechanical forces have been vested with the responsibility for the stores work, they have assumed the full responsibility under the direction of the stores and, in some cases, mechanical and car department responsibilities have been assumed by the stores department. Reductions in stores forces compared with normal times have been over 60 per cent, the skeleton organization, however, being held intact.

The savings effected in the purchases and stores department, considering pay-roll reductions, reduction in stocks, substitution of cheaper items, use of goods usable, reclaimed material and miscellaneous economies, will total over \$1,000,000 on the Pacific lines for 1932.

The wisdom of past expenditures for efficient facilities and material-handling equipment, Mr. McKelligon states, is being demonstrated at the present time. They are aiding immensely in effecting required economies.

The unit pricing arrangement eliminates the necessity of keeping price-book records, the price being on the material or tray and applied to the documents by the forces who issue the material and know all about the article issued. Stationery forms and reports have been studied with great care, and many reports in practically every department, have either been cancelled or prepared less frequently to reduce clerical expense.

Supply trains have been supplanted by supply cars and are operating under present conditions in local trains or other available trains at less frequent intervals. This method of delivery of material was abolished entirely for a period, but it was found that the expense was much greater than the present method of delivery.

The supply car force consists of one man in charge of the cars, and a helper.

Stores delivery forces have been reduced in line with reductions in shop work, but the service is maintained to the extent necessary to furnish requirements. Supervision of this service has been consolidated where it will get the best results for the least expense.

Reclamation is being continued and satisfactory savings have been developed in the reclamation of oils, journal box packing, and wiping waste, while general reclamation is carried on only to the extent where good usable materials can be produced for current needs at very low costs.

Although there is probably less demand for scrap in the open market on the Pacific coast than in the East, the road is disposing of some scrap currently. However, scrap is being handled only to the extent necessary to sell to the best advantage or keep the company's industries supplied or to recover usable material that gets into the scrap in spite of all precautions.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended June 4, which included the Memorial Day holiday dropped to 447,387 cars, a decrease of 313,697 cars as compared with the corresponding week of last year and of 488,195 cars as compared with the corresponding week of 1930, which did not include a holiday. The summary, as compiled by the Car Service Division of the American Railway Association follows:

Revenue Freight Car Loading			
Districts	1932	1931	1930
Week Ended Saturday, June 4, 1932			
Eastern	99,763	168,965	212,242
Allegheny	85,488	152,937	189,663
Pocahontas	29,140	41,561	52,448
Southern	73,015	111,164	126,783
Northwestern	53,790	110,694	150,984
Central Western	67,078	108,738	129,096
Southwestern	39,113	67,025	74,366
Total Western Districts	159,981	286,457	354,446
Total All Roads	447,387	761,084	935,582
Commodities			
Grain and Grain Products	23,303	34,429	38,557
Live Stock	14,398	18,059	23,899
Coal	63,094	107,684	135,887
Coke	3,011	5,959	9,745
Forest Products	16,419	33,175	50,975
Ore	2,185	30,750	63,450
Mdse. L.C.L.	154,984	224,031	243,753
Miscellaneous	169,993	306,997	369,316
June 4	447,387	761,084	935,582
May 28	520,962	711,249	860,064
May 21	515,450	754,738	929,606
May 14	517,667	747,057	928,759
May 7	533,677	745,770	932,346
Cumulative total	12,103,903	16,121,989	19,641,420

Car Loading in Canada

The holiday (May 24) in the twenty-first week prevents true comparisons of Canadian car loadings with the loadings of the previous week and a year ago. Total loadings for the week ended June 4 amounted to 42,650 cars, an increase over the previous week of 2,809 cars, but, after adjustment, the index number dropped from 70.56 to 67.55, a new low for this year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
June 4, 1932	42,650	16,232
May 28, 1932	39,841	17,078
May 21, 1932	43,678	18,789
May 30, 1931	47,031	25,880
Cumulative Totals for Canada		
June 4, 1932	911,169	460,757
May 30, 1931	1,054,264	620,378
May 31, 1930	1,272,886	797,415

T. & T. Section Meets in Chicago

Well-attended three-day session includes discussion
of improvements in communication
facilities

ACTIVE discussion of reports dealing with improved methods of handling railroad communication facilities and with numerous engineering developments in this field marked the fifteenth annual session of the Telegraph and Telephone section of the American Railway Association in the Stevens hotel, on June 7, 8 and 9 in Chicago. Under the leadership of J. L. Niesse, chairman of the section and superintendent of telegraph of the Big Four, the meeting proved to be one of the liveliest ever held by the section, being attended by 240 members and guests.

The following officers were elected for the ensuing year: Chairman, C. A. Plumly, superintendent of telegraph, Baltimore & Ohio; first vice-chairman, A. W. Flanagan, superintendent of telegraph, Southern Pacific; and second vice-chairman, H. C. Chase, superintendent of telegraph, Atchison, Topeka & Santa Fe.

M. J. Gormley, executive vice-president of the American Railway Association, delivered the opening address, on Tuesday morning. On Tuesday afternoon a demonstration on noise induction was given by H. R. Huntley of the American Telephone & Telegraph Company. On Wednesday afternoon H. A. Affel of the American Telephone & Telegraph Company talked informally on the subject of telephone repeaters for train dispatching and message circuits, and F. A. Cowan, transmission engineer of the same company, spoke on the application of terminal repeaters in connection with railroad trunk lines. The Thursday morning session was the occasion of an informal talk on noise and acoustics in railroad offices, by G. T. Stanton, acoustic consulting superintendent of the Electrical Research Products, Inc. The program also included the reports of 13 committees, those on Message Traffic, Communication Development, Outside Plant, and Radio Communication being summarized here briefly. The remaining reports dealt with detail specifications of communication facilities which were not of general interest and are not therefore abstracted here.

Mr. Gormley commended the Section for its courage in holding its convention despite present adverse business conditions, and pointed to the important work that is being done by the Telegraph & Telephone section in furthering the progress of the railroads. Challenging the statement of a critic of the railroads to the effect that they do not display the same spirit of progressiveness that is shown by other industries, Mr. Gormley pictured the intensive and extensive development of new ideas that has been found in all branches of railroading during the past few years. A recent study shows that of a total of 3,000 items of railway equipment developed or improved in the last few years, the T. & T. section was credited with 342. He stated that the average engineering group does not tell others enough about its accomplishments. Now, he said, is the time when new ideas are needed to improve railroad service and effect economy in operation. Lack of business is, of course, the main difficulty confronting the railroads at present, but the solution of their prob-

lems in the future will lie in reducing the costs of operation below that of competing methods of transportation.

Improved service and greater economy are the goal in association work, he said, and are the criteria of the work done by the American Railway Association. Lack of money is the only deterrent to the full realization of the economies made possible by the work of the engineering divisions of the railroads and the A.R.A. Mr. Gormley spoke optimistically as to the future of the railroads, declaring that he expects legislation to be enacted which will put the railroads on a more nearly equitable basis of competition with other forms of transportation.

Laying Cables by Machinery

As a part of the report on Outside Plant, R. E. Finley (N.Y.C.), chairman, a motion picture was shown illustrating the operation of machinery used last year in laying an extensive mileage of underground cable. The first operation was to drag through a "rooter" which made a trench about three inches wide and 30 in. deep. Next the cable-laying machine carrying the reel deposited the cable at the bottom of the trench and brought back the dirt into the trench. The machine was used successfully in hilly country as well as in swamps. From three to four miles of cable were laid each day at an average cost of 1½ cents per foot, exclusive of the cost of clearing the right-of-way. The cable-laying machinery was developed by the Four Wheel Drive Company, and the wheel arrangement as well as the tractors were furnished by the Caterpillar Tractor Company. The film was shown by the Caterpillar Tractor Company, and O. E. Andren, general supervisor of industrial sales of this organization, gave a talk explaining this method of laying cables.

When discussing preservatives for wood poles (included in the report on Outside Plant), one member referred to reports of unsatisfactory results being obtained from poles treated with ZMA (zinc meta arsenite) on the Missouri Pacific and on the West Shore line of the New York Central. D. P. Dickie, assistant construction engineer of the Western Union Telegraph Company, replied that certain unsatisfactory conditions had been found. In about 1,000 poles, treated more than two years ago and recently examined, about six per cent showed some indication of decay. It is thought likely that much of the difficulty developed from improper methods of treatment, although it is possible that the variation in the natural acid content of the timber has caused the formation of certain soluble salts of arsenic rather than zinc meta arsenite, which is insoluble, which soluble salts so formed probably leached out of the poles, leaving the timber without adequate protection. As a result of these findings, the Western Union has ceased to use ZMA treatment until measures are devised to overcome the trouble. Among the expedients now being studied are means to complete the chemical action of the ZMA before ap-

plying it to the timber. Mr. Dickie pointed out that ZMA was developed several years ago to meet a demand for a cheaper preservative. While inherently ZMA treatment should be cheaper than creosote treatment, present conditions have resulted in such low prices being quoted for creosote treatment that the prices are now comparable with that for ZMA treatment. Mr. Dickie stated that development work in connection with ZMA treatment is being continued and he held out the hope that the difficulties would ultimately be overcome. He also emphasized the success attained by ZMA in certain tests in New Jersey and in the Canal Zone where the results were equal to those with creosote.

New Message Conveyor

Developments in the art of communication were portrayed in the report of Committee No. 5, S. L. Van Akin (N.Y.C.) chairman. The Western Union Telegraph Company has developed an entirely new method of conveying messages mechanically between various points in an office. The drag conveyor, as this device is known, takes its name from the fact that messages are carried along between a steel channel and a moving flat belt, the movement of the message being due to its greater adhesion to the belt than to the smooth channel. The report states that the advantages of the new drag conveyors over the old flat belts are lower cost, higher speeds, greater simplicity, freedom from static electricity, ability to carry messages over aisles, around corners and obstructions, less maintenance, less obstruction to light and vision, and greater safety to messages.

Other developments listed in the report of Committee No. 5 are as follows: A duplex balance indicator to facilitate the adjustment of the static balance of duplex telegraph sets; an arrester relay to protect transmission on communication circuits along electrified railroads or close to high-voltage supply lines; a new type of motor-driven selector key operated by means of push buttons (For complete description see page 572 of *Railway Age* for April 2, 1932); a printer selector similar mechanically to the selector switch used in automatic telephony but intended for use in printer telegraph circuits; and other lesser developments.

Message Traffic

The Committee on Message Traffic, G. D. Hood (C.R.I.&P.) chairman, submitted reports on censorship, a revised method of keeping a record of requests for and completion of long-distance telephone calls over railroad telephone circuits, a revised delivery record of telegrams handled over railroad wires, new operating practices in connection with printing telegraph, and suggestions for users of telephones.

In connection with this committee's report on censorship, Exhibit 6-A stated, "To insure that telegraph and telephone services are properly used, it is essential that those authorized to use them have a clear understanding of the methods best adapted to secure the maximum efficiency. In order to bring about such an understanding, educational work should be carried on continually and the use of the services supervised to detect and correct wasteful and inefficient practices. This work should be under the direction of a person who not only has a good knowledge of the operation of the telegraph and telephone services, but who also has a general knowledge of the functions of all departments of the railroad and who is qualified to judge as to the communication necessary to meet the requirements of each department. Maximum efficiency results when the correct balance is established between the cost of the serv-

ice and the benefits derived. In order to secure this result, it is recommended that an official censor be appointed in each department. Brevity in messages and the elimination of unnecessary communications can be brought about only by the education of those using communication services. The best results will generally be secured by discussion rather than by correspondence. The censor shall decide whether wire transmission is justified and if so, whether the telegram is in proper form to convey clearly the essential information without unnecessary words, and see that the proper class of service, i.e., 'Preferred,' 'Day,' 'Night,' etc., is used. It is recommended that all departments send copies of all telegrams sent by them over commercial telegraph lines to the official censor so that such messages may receive the same scrutiny as those sent over railroad wires. It is recommended also that the official censor scrutinize telephone toll tickets and telephone bills to insure that the most economical method of communication is used consistent with the requirements of the service."

Front-to-Rear-End Communication

In the absence of A. R. Belmont (N.Y., N.H.&H), chairman of Committee No. 12—Radio and Wire Carrier Systems, J. C. Burkholder (C. N.), vice-chairman, presented the report of this committee. Mr. Burkholder read a letter received from the General Electric Company, in which it was stated that "The General Electric Company has developed a system of train communication from front to rear without the use of radio propagation. The result is accomplished by using the rails and some adjacent conductor which is coupled to the rails at intervals through impedances. The equipment on the train consists of transmitter and receiver at each end, connected to inductor coils near the rails. The electrical oscillations in the inductor coils are transmitted to the rails and thus to the line through the coupling impedances and are picked up from the rails by any inductor coil within a predetermined distance. Inasmuch as the system does not use radio propagation, it does not come within the jurisdiction of the Federal Radio Commission. Consequently, no license is needed to install and operate the system."

A representative of the Radio Corporation of America announced from the floor that the R. C. A. is now developing a front-to-rear-end communication system employing extremely short-wave transmission and requiring very small amounts of power. The system is also applicable to hump-yard operation.

According to the report of Committee No. 12, there have been important developments during the past year in ship-to-shore radio telephone service for harbor vessels in certain seacoast harbors of the United States, and it is expected that during the ensuing year radio shore stations, connected to the public telephone systems, will be established to give telephone service to harbor craft operating in the ports of New York, Boston, Seattle, San Francisco and Los Angeles. The Federal Radio Commission has already granted a construction permit for the station at New York, to the New York Telephone Company and applications are on file with the Commission for construction permits for stations to be operated by the New England Telephone and Telegraph Company at Boston and by the Pacific Telephone and Telegraph Company for stations at the remaining three locations mentioned above. A report of a committee appointed by the General Managers' Association of New York to study communications with railroad-owned harbor craft in New York Harbor states that considerable time is being lost when the

(Continued on page 1018)

Head Failures in Intermediate Manganese Rail

A report of progress in the investigation of the causes of this defect and ways of eliminating it

By H. H. Morgan and J. R. Mooney

Manager and Assistant Manager, respectively, Rail and Fastenings Department, Robert W. Hunt Company, Chicago



A Cross-Section of a Martensitic Streak, Magnified 200 Diameters, Showing the Appearance of the Structure and a Crack Extending Through it into the Surrounding Metal

SINCE the martensitic structure found in intermediate manganese rail steel was described in an article in the March 8, 1930, issue of the *Railway Age*, much further work has been done on the subject. A brief description of the appearance and occurrence of this martensitic structure, together with an account of what we now know about it, is therefore given here.

In some intermediate manganese steel rails there may be found near the center of the head and of the base, a peculiar micro-structure which, for lack of a better name has been described as "martensitic." The structure occurs in the form of streaks from $\frac{1}{2}$ in. or less to at least 2 in. in length, extending longitudinally through the rail. These streaks vary from less than a thousandth up to a hundredth of an inch in diameter and may be likened to very fine sewing needles embedded longitudinally in the rail. This structure is extremely hard and brittle and the streaks are often found to be cracked longitudinally. These cracks extend and join to form the main rupture in many of the failed rails.

Relation of Structure and Chemistry to Failures

The heats of intermediate manganese rail having a large number of failures contain carbon and manganese in the upper portion of the specification range of carbon 0.54 to 0.67 and manganese 1.30 to 1.60 and the susceptibility to failure increases with the carbon and manganese. The worst heats are those with carbon and manganese at or above the limit. The martensitic structure was first found while investigating a split head in an intermediate manganese rail and after a sure method of detecting it had been developed, it was found in many other intermediate manganese rails, including some new rails just out of the mill, some failed rails and some rails which had apparently given good service in track. As a result of many examinations, we found that the martensitic structure first appears when the carbon and manganese are at the middle of the specification range and that the size and number of the areas of martensite increase with the carbon and manganese content. However, this condition is not found in all heats with chemistry above the middle of the range and it is found, though in very

small size and amount, in rails which have apparently given good service.

Steel with chemistry near the lower limits of the range is practically free from any tendency to fail and from martensite, but if this composition is made the upper limit of the specification, heats near the lower limit will be too soft for use as rails, so that it is not possible to eliminate the trouble in this way.

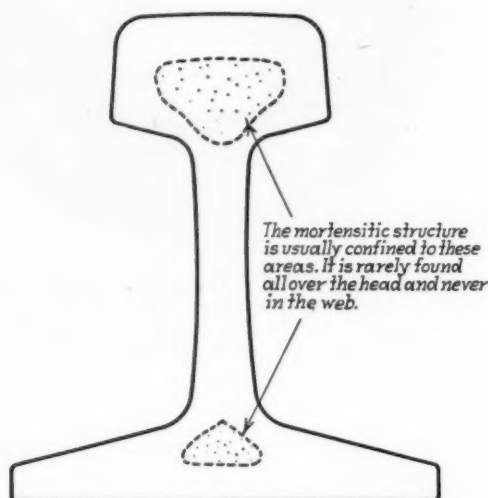
Analysis of Martensitic Structure

The minuteness of the needles, coupled with their extreme hardness, make it almost impossible to secure suitable drillings for chemical analysis. However, the spectroscope is suitable for the analysis of extremely small samples and after considerable difficulty, we succeeded in machining several samples from intermediate manganese rails. These were about $\frac{1}{8}$ in. square at one end and for about 0.2 in. were reduced to a diameter of about 0.008 in., of which the inner 0.004 in. was martensitic structure and the rest of the specimen the surrounding sorbitic structure.

The analysis was made at the University of Illinois under the direction of Professor George L. Clarke. After some research work and the preparation of several samples of definite manganese content, he reported the manganese content of the specimens we supplied him as 4 per cent plus or minus 0.1 per cent. Since about one-quarter of the cross section of the specimen is martensitic structure the manganese content of this structure is probably in the neighborhood of 10 per cent, providing that the surrounding sorbitic structure has a content of about 2 per cent. We do not know that this is so, but at any rate the manganese content of the martensitic structure is at least four per cent.

We supplied samples of martensitic structure and samples of the surrounding sorbitic structure from failed and from new intermediate manganese rails, and similar samples from new carbon steel rails. A qualitative spectroscopic analysis of all these showed no appreciable quantity of any metal other than iron and manganese. The sensitivity of the analysis varied from 5 to 0.5 parts per million for the various metals analyzed for, which are aluminum, cobalt, chromium,

copper, magnesium, molybdenum, nickel, titanium, uranium, vanadium, tungsten and zirconium. Since a spectroscopic analysis is not suitable for the determination of boron, carbon, phosphorous, sulphur or silicon, we know nothing about the occurrence of these in the various specimens. Professor Clarke volunteered to make an x-ray analysis of this structure and we furnished him with suitable specimens. He reported that the martensitic structure was a very fine grained structure with



The Black Dots Represent the Ends of Streaks of Martensitic Structure. These Streaks Are Sometimes Several Inches Long and Vary From 0.001 in. to 0.010 in. in Thickness. A Cross-Section of the Head of a Typical Split Head Rail Will Show 10 to 20 of the Larger Size Streaks and 100 or More Smaller Ones.

considerable distortion and a slight amount of preferred orientation, and that the structure belongs to the iron-carbon-manganese system and is not that of the true martensite.

It is well to call attention here to the confusion of terms. This structure found in intermediate manganese rails has been described as martensite or martensitic because it resembles martensite more than it does anything else and yet it is entirely different. We should have a name for it.

Effect of Temperature and Pressure

In our laboratory we found that when small pieces of steel (pieces of 0.6 in. square by 1 in. long along the axis of the rail) containing martensite were cut from the center of the head of a rail and were heated, the appearance of the martensitic structure changed at a temperature between 200 and 300 deg. Centigrade. It no longer showed bright upon etching with picric acid, and, in fact, was so like the surrounding structure that it was extremely difficult to locate. Heating to higher temperatures changed the structure further, making it still more like the surrounding sorbitic structure. This change was progressive to temperatures well above the critical range, providing the piece was cooled in air. When the piece was quenched from above the critical range, the sorbitic structure was converted into sorbite, troostite or martensite, depending on the rapidity of the cooling, while the original martensitic structure was changed into a structure resembling true martensite but which was entirely different from the original martensitic structure found in the untreated rail. If a complete section of a rail is heated above the critical temperature and cooled rapidly, such as by blowing a blast of cold air on it, the original martensitic structure reappears and, in

some cases, the needles seem to enlarge somewhat in cross section.

There is an important idea to be had from these two experiments and that is that the behavior of the martensitic structure on rapid cooling from above the critical temperature seems to depend upon the size of piece it is in. Knowing that there are stresses present in the head of a rail and that these stresses are largely relieved by machining away all of the metal except a 0.6 in. square, it is possible that the stress is responsible for the difference in the behavior of the martensitic structure. This is in line with Professor Clarke's statement that the structure belongs to the iron-carbon-manganese system as it is well known that pressure is an important factor in determining the equilibrium of any system.

Eliminating the Structure

The head failures frequently found in intermediate manganese steel rails are connected in some way with the martensitic structure found in such rails and this structure is associated with local segregation of manganese. Beyond the fact that the amount of martensite and a tendency toward head failures increase with the carbon and manganese content and that such failures and the structure are not found in steel containing carbon and manganese near the lower limits of the specification, we do not know the cause of the structure or of the failures. The martensitic structure has been found in rails from heats to which all the ferro-manganese was added in the furnace and before tapping sufficient time allowed to make sure that all of it was melted. This eliminates the possibility that additions of cold ferro-manganese to the ladle are responsible for the local segregation or the structure.

Since the hardness required in rail steel eliminates the possibility of correcting the trouble by lowering the carbon or manganese content, it seems that we should try to find some other way. One manufacturer, using medium manganese steel for castings, has found that an addition of 0.1 per cent vanadium eliminates the martensitic structure and improves the physical qualities of the steel, and it is possible that this or something similar could be used for rail steel. However, any experimenting of this sort must necessarily be done by the rail manufacturers as they alone have the facilities for doing the work.

T. & T. Section Meets in Chicago

(Continued from page 1016)

captains are hunting telephones and also when they are unable to communicate with boats after they have left a pier. Additional telephones on certain piers will help reduce this lost time. Light-signal systems have been considered as a means of attracting attention to tug boats en route, but they appear to be too expensive to be practicable.

The Bell Telephone Company has a license to operate a ship-to-shore radio system in the harbor. This service will require the boat owner to install a set on each boat to which service is desired. It is estimated that the shore station toll for calls handled will be approximately \$1 per minute or part thereof, which will include the average call, with a minimum charge of \$30 per month per company contracting for this service.



Cantaloupes From California Moving In Solid Train Loads

"Phony" Freight Claims Declared Competitive Waste

Rule for mechanical inspection of cars proposed
at annual meeting of Freight Claim
division at Chicago

THE settlement of freight claims on the basis of damage done rather than on traffic considerations was the keynote of the forty-first annual session of the Freight Claim division of the American Railway Association at Chicago on June 7-9. The meeting over which Chairman A. R. McNitt (Union Pacific) presided, was attended by over 250 claim, protective and mechanical department representatives of the railroads of the United States, Canada and Mexico. This matter of excessive claim payments arose on several occasions, being mentioned first in an address by M. J. Gormley, executive vice-president of the American Railway Association, who called attention to the recent indictment of a railroad for giving a shipper concessions and who referred to the case as affording an opportunity for charges that the railroads are incompetent to control their own competitive wastes.

The urgent need for uniformity in claim settlements was outlined in the report of the General committee which said, "The efforts sponsored by the freight claim conferences in the several territories to achieve results in the uniformity of claim adjustments with claimants, has continued to be of interest to the committee. The principal developments are those that have occurred in connection with the matter of destination value of commodities in the absence of a market at or near destination. A recent suggestion to the General committee has been that the matter of the lawful settlement of claims on a uniform basis is of such importance to the carriers

as a whole as to justify special attention, perhaps through the appointment of a committee representing all territories."

Definite action to protect carriers against certain claimants was taken in the adoption of a rule which provides that a claim cannot be paid by a carrier other than that to which the claim is first presented, unless the entire responsibility for loss, damage or overcharge is assumed by the carrier making the payment, or unless the objection is waived by the carrier to which the claim was presented by the claimant. This rule protects the carriers in such cases as where a consignee files a claim with the destination carrier and when that carrier declines the claim, instructs the shipper to file a similar claim with the originating carrier. Because of competitive conditions, the originating carrier may be inclined to pay the claim and then prorate the amount among all carriers participating. Under the new rule, the carrier paying the claim must assume all responsibility and cannot prorate.

Carrier Furnishing Equipment Should Be Responsible

Another attempt to control claim payments manifested itself in a proposed change in a rule governing the inspection of equipment, the change proposing that the carrier furnishing the equipment participate in unlocated damage prorate. The condition prompting the change is particularly prevalent at Chicago. A discussion in which representatives of the Mechanical divi-

sion, as well as those of the Freight Claim division, participated revealed the necessity for a change and as a result the Mechanical division and the Freight Claim division will co-operate in the formulating of a rule which will eliminate the present unsatisfactory conditions.

Under the present arrangement, eastern carriers inspect equipment and if there are any mechanical defects in the cars, they can refuse to accept the shipment. As a result, connecting lines are forced to make more repairs than are necessary, and about 1 car out of 43 received at Chicago is delayed for repairs. It was charged that the refusal to accept cars having minor defects affords an excuse to avoid claims for delay that might occur on the delivering lines. While at present the delivering line can avoid claim payments resulting from delay caused by mechanical defects that may have existed at the point of origin, the intermediate carriers are forced to repair the cars and assume the responsibility for damage caused by the delay.

W. E. Dunham, superintendent of the car department of the Chicago & North Western, favored co-operation between the two divisions, with a view to eliminating the present condition. He referred to an 18-month study made by carriers in the Chicago territory to determine the reason why cars, particularly those for eastern lines, are held at that point. The study showed that inspection has become so stringent that minor defects are the principal cause for many cars from the Pacific coast being held at Chicago. At present, he said, intermediate and eastern lines are penalized for defects which are the fault of the originating line. As a result, he continued, the North Western has had to extend its inspection to connecting points and govern its inspection at these points so that cars will pass the eastern inspection and not be held up at the expense of the North Western at Chicago. He contended that with present operating rules calling for speed of delivery, mechanical men feel that cars must not be delayed and that the receiving line should accept repair or transmit the cars on its own responsibility.

C. T. Ripley, chief mechanical engineer of the Atchison, Topeka & Santa Fe, contended that the present rule provides an opportunity to tie up cars at the terminal in order to prevent claims that might occur on delivering lines. He said that cars are refused because they do not pass safety inspection and because the receiving line wishes to avoid claims. The Arbitration committee of the Mechanical division, he concluded, after being informed of the proposed change by the Freight Claim division, expressed a desire to work with the Freight Claim division with a view to improving the situation.

C. J. Nelson, chief interchange inspector of the Chicago Car Interchange Bureau, expressed the opinion that the proposed change is constructive and will remedy a situation that has been detrimental to the carriers and not beneficial to shippers.

There should be an incentive on the part of all carriers handling the cars, he said, to avoid delay in transit so as to eliminate resulting claims.

Should Legislation Prohibit Bulge Pack?

Another attempt to reduce claim payments over which the railroads have little or no control occurred during the discussion of the bulge pack, the members adopting a resolution extending the efforts of the Freight Claim division to bring about the elimination of the bulge pack. According to the report of the Committee on Freight Claim Prevention, shipments of fresh fruits,

melons and vegetables continue to reach destination in damaged condition, due largely to excessive bulge pack, the use of top, body and package ice and irregular or shifted load. The outstanding claim cause, according to the report, is the unrestricted bulge pack, which has caused an increasingly bad situation. There can be no material reduction in claims for broken packages, the report continues, until the bulge pack is eliminated or restricted.

In introducing the subject of the bulge pack, F. E. Winburn, special representative of the Freight Claim division, said, "It is not expected that any definite action can be taken at this time other than to develop sentiment as to whether it is reasonable to approach our tariff-making bodies in the several territories with the request that regulations be provided for the restriction of the bulge pack on such commodities as tomatoes, lettuce, carrots, mixed vegetables, celery, cabbage, peaches and cantaloupes. In order to develop sentiment at both origin and destination points, we have had shippers and receivers interviewed. In answer to our inquiry, 'Why the bulge pack?', replies are both confusing and conflicting. We are told that buyers continuously demand the bulge pack—the greater the bulge, the greater the price paid. It is further intimated that buyers play one shipper against another in their demands for more bulge. If that is correct, it may not be possible to bring about the desired results by persuasion. The carriers are obligated to transport these commodities safely and if the excessive bulge pack is interfering with proper loading and stowing, which is a factor contributing directly to the damages encountered, it is only right that arbitrary action be taken to apply the necessary remedy."

H. B. Cooper, superintendent of freight loss and damage claims of the Gulf Coast Lines, called attention to the lack of uniformity among carriers, stating that while the southwestern carriers inflict a penalty of 20 per cent for the violation of loading rules, California carriers have no restrictions. He recommended the elimination of the bulge pack on some commodities and its restriction on others, contending that under all conditions the bulge should be restricted by regulations that provide that the cover should not be $\frac{1}{2}$ in. longer than the crate and should be nailed flush with the end of the crate.

G. W. Lupton, assistant to the vice-president of the Atchison, Topeka & Santa Fe, in discussing loss and damage in general, expressed the opinion that competition in the vegetable industry is becoming so keen that excessive restrictions placed upon shippers by railroads may drive more of that business to the highway trucks. He said that present classifications are so full of requirements that much traffic already goes to the highways as a result. He contended that efforts should be directed to securing traffic. He also recommended a check of carload shipments at destination.

As a result of investigations made by the test department of the Santa Fe in 1930 and 1931, Mr. Lupton concluded that damage was progressive as shipments travel across the country, that the railroads still have rough handling in yards and that particular attention directed to the handling of freight would eliminate much damage.

The investigation made by the Santa Fe test department covered loading conditions in California, visible breakage in cars on arrival at Chicago, unloading practices at the Chicago auction houses, the strength of citrus fruit boxes, the pressure of the so-called "big-squeeze," loading pressures in switching, loading pressures enroute in trains, the jumping of boxes off the

floor due to shock, the load movement as found by riding in cars and the riding qualities of various kinds of truck springs used with standard wheels and with specially prepared wheels.

How to Disseminate Carloading Methods Among Shippers

Another subject considered at the convention was the possibility of devising some plan that will consolidate and make useful to a great number of widely scattered shippers, the many good loading ideas developed from individual studies in different parts of the country. A resolution was adopted providing that the division endorse the program of the Committee on Freight Claim Prevention in its co-operation with conferences that are encouraging shippers to exchange effective loading methods and that the committee urge conferences to continue and develop the practice.

The discussion, which was led by A. L. Green and Joseph Marshall, special representatives of the Freight Claim division, showed that a great deal of work has been done by individual railroads in helping shippers to discover new and safer methods of loading and bracing carload freight, but that the field is so large and the units and factors so numerous that it is possible to waste effort because of lack of knowledge of similar work done elsewhere. The interchange of loading information between shippers has not developed to the extent that present conditions seem to demand, probably because each shipper handles only his own business and is not interested in the damage problems of other shippers. Eight regional shippers' advisory boards have formed prevention committees, and four of these have developed plans for exchanging information of value to shippers in the safe handling of freight. Two other boards have similar plans under advisement. It was felt that prevention information sponsored by advisory boards will be accepted with better grace by the shipping public than similar matter originating with the railroads.

The opinion was also expressed that if this activity of the advisory boards should prove successful, the logical step would be to develop an intensive campaign under a definite plan sponsored by the American Railway Association, under which suggestions concerning carloading methods and other ideas useful to shippers, from whatever source originated, will be circulated through one or more of the trade associations representing the commodity, practice or system involved. There are over 9,000 such commercial and industrial organizations.

Report of Committee on Freight Claim Prevention

The report of the Committee on Freight Claim Prevention showed that claim payments had decreased from \$36,239,640 in 1930 to \$25,868,485 in 1931, a decline of 28.6 per cent. An increase was reflected in only one classification, robbery of entire package, but this was more than offset by a decrease in the classification, robbery other than entire package. Continued decreases were shown in the two major damage items, rough handling and unlocated damage, while substantial decreases were reflected in claims due to delay, defective equipment, freezing or heater failure and loss.

For the first time in five years charges to the fresh fruits, melons and vegetables group of commodities showed a decrease, which amounted to \$2,642,408, or 22.4 per cent. The outstanding accomplishment during 1931 in prevention work relating to vegetable shipments was the publication in tariffs of southeastern and southwestern lines of rules requiring the crosswise loading of tomatoes in lug boxes. The quality of containers is

showing a steady improvement and as a result of closer supervision by originating lines and co-operation on the part of shippers, continuous improvement in loading is apparent. Tariff provisions for improved loading of watermelons in southeastern territory were approved by the Interstate Commerce Commission and duly published. Southwestern carriers contemplate the publication of similar regulations. The loading in Florida of citrus fruits in bulk and in fibre bags has resulted in an increase in claims for damage and deterioration.

Live stock loss and damage in 1931 amounted to \$1,638,342, a reduction of \$716,252 under 1930, and of \$1,148,119 under 1929. While a substantial part of the reduction may be attributed to a decrease in the volume handled, the decline in market value and the mild open winter, the committee felt that the general activity in the interest of claim prevention upon live stock has been a prominent factor, as for several years prior to and including 1929, the trend had been upward, especially in claims for crippled and dead animals. Statistics indicate quite an improvement in the ratio of dead animals to the total number of animals received in the principal western markets during 1931. The ratio for cattle was 1 dead to each 3,069 live animals; calves, 1 to each 466; sheep, 1 to each 1,222; and hogs, 1 to each 1,070. Each of these records is better than for any year since 1921.

Based on available data it seems probable that the damage to sewer pipe can be reduced with no increase in loading costs. But even with this desirable objective attained, there will remain many conditions which will require constant attention. The following practices were recommended: Inspection of pipe and loading at manufacturing plants; the selection of proper equipment for the loading; the careful handling of cars in yards and terminals; the inspection of pipe and unloading practices at destinations; and claim statistics to guide prevention efforts. The causes and prevention of excessive damage to clay products were studied with exceptional care and effectiveness by the Freight Container Bureau, the railroads individually, and the freight claim conferences. Experimental loading and car impact tests disclosed facts in connection with stoneware, glazed hollow building tile and glazed brick that should be reflected favorably in future claim payments. In several tests, damage to glazed and face bricks was almost eliminated by the use of paper board separators instead of straw, by placing brick lengthwise instead of crosswise in the doorway space and by tight loading.

Officers Elected

Officers elected for the ensuing year were: Chairman, H. J. Freeman, freight claim agent of the Pennsylvania; first vice-chairman, H. M. Moors, freight claim agent of the Texas & New Orleans; and second vice-chairman, J. L. McCormack, superintendent of freight loss and damage claims of the St. Louis-San Francisco. The General committee was given power to select the place and date of the next meeting.

THE "RAILROAD PROBLEM" IS NOT NEW. Reprinting from its files of one hundred years ago (June 8, 1832) the New York Evening Post quotes from the Ballston Spa Gazette, of Ballston Spa, N. Y., the following item of "public relations" news: "Two very responsible persons have offered to lease the Saratoga Rail Road for ten years and pay 7 per cent per annum on the entire cost of construction. We presume the company will not listen to any such proposition, as we think it has been demonstrated that the income of this road will be over 35 per cent per annum, clear of all expenses. A rise of 17 per cent in the price of stock within a few weeks has shown that the public is beginning to understand the subject."

New Haven Electric Locomotives

PERFORMANCE of ten electric locomotives placed in service last year by the New York, New Haven & Hartford was described in the *Railway Age* of June 11, 1932, page 982. Ratings, weights and principal dimensions of the locomotives as given in the article, include weights which are maximum weights

Weights of the 0351-0360 Series of Electric Locomotives

Total light weight.....	385,500 lb.
In running order.....	403,500 lb.
On driving axles.....	273,900 lb.
Weight on driving axle—	
No. 1 truck.....	45,200 lb.
No. 2 truck.....	46,100 lb.
Weight on guiding axle—	
No. 1 truck.....	31,000 lb.
No. 2 truck.....	33,800 lb.

used for design purposes. The actual scale weights are given in the accompanying table.

The division of weights as shown represents the locomotive with full oil and water capacity as well as the usual quantity of water in the heating boiler.

The first of the new locomotives was placed in service June 22, 1931, and the last one September 30, 1931. On May 1, 1932, they had accumulated over 500,000 miles.

Drastic Cut in I. C. C. Appropriation Proposed

WASHINGTON, D. C.

AREDUCTION in the Interstate Commerce Commission's appropriation for the fiscal year 1933 to \$5,348,560, as compared with the \$9,412,473 allowed it for the current year, is proposed in the independent offices bill as reported to the Senate on June 10 by its appropriations committee. As passed by the House last month the bill had cut the commission's allowance to \$7,228,179, as compared with the Budget bureau's estimate of \$8,761,410, but the Senate Committee used its pruning knife even more ruthlessly, cutting the amount for the valuation bureau from the \$3,554,473 available for this year and the \$2,750,000 allowed by the House to only \$750,000. The amount for the Bureau of Accounts, which had been reduced by the House from \$1,504,420 to \$383,560, or a million dollars less than the Budget estimate, was, however, increased by the Senate committee to \$883,560 at the earnest solicitation of the commissioners and others who testified before the committee.

For the commission as a whole the reduction is 43 per cent, which is a sharper cut than has been applied to most government organizations. For the valuation bureau, which has about 950 employees, the reduction is 79 per cent, and for the accounting bureau, with 325 employees, it is 41 per cent, necessitating a wholesale dismissal of personnel, although if the valuation appropriation be set aside the reduction in the amount allowed for what might be called the "regular" work of the commission is only about 20 per cent. As a considerable part of this will be offset by reductions in salaries it does not promise much in the way of a relaxation of regulation beyond a curtailment of recapture activity.

For the various divisions of the commission's work as it is itemized in appropriation bills the recommendations of the Senate committee compare with the current appropriations as follows:

	1933	1932
I. C. C. General.....	\$2,600,000	\$3,090,900
Regulating Commerce (Bureau of Accounts) ..	883,560	1,504,420
Safety of Employees.....	500,000	534,660
Signal Safety Systems.....	40,000	48,260
Locomotive Inspection.....	400,000	504,865
Valuation	750,000	3,554,368
Printing and Binding.....	175,000	175,000
Total	\$5,348,560	\$9,412,473

Apparently the commission is being made a victim not only of the necessity for economy but also of the lack of interest in Congress in a valuation which, even on the commission's basis, is too high to be popular and no longer holds out much hope of being important for recapture purposes. The primary valuations required by the 1913 law are now nearly completed and if the bill pending in the House to repeal Section 15a should be passed the specific need for a valuation would be largely eliminated. Moreover, since the commission has regarded the valuation as too high for rate-making purposes, the railroads have largely lost interest in spending millions of dollars a year on it and have asked that the valuation law be repealed, while the commission has found no difficulty in using the data already available by taking it into consideration in an informal way as estimates for such purposes as it desires, such as in passing upon the collateral value of securities offered by the roads for government loans.

For many years Congress has shown some reluctance to continue the heavy expense of the valuation work but for several years it has been induced to allow \$3,000,000 or more for the purpose each year on the ground that it would soon begin to pay for itself as a basis for the recapture of huge sums.

A large part of the cut made by the House was in the amount to be used for recapture work, on the theory that the bill to repeal Section 15a of the interstate commerce act was likely to be passed either at this session or at the next. However, the House took a clear million from the Budget estimate for the Bureau of Accounts, which in recent years has devoted a large proportion of its efforts to the recapture work, and less than half a million from that for the Valuation Bureau.

When the bill was reported there was also made public the record of the hearings before the Senate committee at which appeals for more liberal treatment than had been accorded in the House bill were made by Chairman Porter and Commissioners Eastman, Lewis and McManamy, Representative Crosser, and R. C. Fulbright and Luther M. Walter for the National Industrial Traffic League. They explained in detail the work of the commission, which they said Congress had required it to do, and took the position that it should provide the money necessary to do the work. It was emphasized that it is not certain that the bill to repeal Section 15a will be passed. The Senators, however, were mainly interested in ways of saving money.

When the commissioners referred to various investigations, ordered by Congress, such as the Hoch-Smith investigation and the six-hour day investigation, without making any appropriation for them, Senator Bingham asked if the commission does not "do things a little thoroughly," and referred to the extensive record made in the western grain rate case. Chairman Porter reminded him that that case "involved every bushel of grain from the Mississippi river to the Pacific Ocean." "Did you have to count them all?" asked Senator Bingham.

(Continued on page 1040)

Two A. R. A. Divisions Meet at Chicago

Purchases and Stores at Stevens Hotel, June 22 and 23—Mechanical Division at Congress Hotel, June 23 and 24

THE Purchases and Stores and the Mechanical Divisions of the American Railway Association each will hold its annual meeting at Chicago next week. The Purchases and Stores Division will convene at the Stevens Hotel on Wednesday morning, June 22, at 9:30 a. m. daylight saving time, and its sessions will continue through the following day, Thursday, June 23.

The Mechanical Division will hold its meeting at the Congress Hotel beginning a day later than the Purchases

and Stores Division—Thursday, June 23. Its meeting will continue through Friday, June 24, and a special meeting may be held on Saturday morning to discuss an appendix to the report of the Committee on Car Construction covering the proposed design of a steel-sheathed wood-lined box car, if time does not permit this matter to be considered before adjournment Friday afternoon. The calendars of the two Divisions follow:

Program of Division VI—Purchases and Stores

Stevens Hotel, Chicago

Wednesday, June 22, 9:30 A. M., Daylight Saving Time

Meeting called to order by Chairman.

Address by Henry A. Wheeler, president, Railway Business Association.

Address by M. J. Gormley, executive vice-president, American Railway Association.

Report of General Committee.

Address by Chairman, L. C. Thomson, manager of stores, Canadian National.

NEW BUSINESS

Presentation and Discussion of Reports.

SUBJECT 1—Purchasing and Stores Department Manual—Recommended Rules and Practices.

SUBJECT 2—Classification of Material.

SUBJECT 6—Purchasing and Storekeeping for Highway Motor Vehicles.

SUBJECT 3—Recovery, Repairs and Reclamation of Discarded Material—Classification, Handling and Sale of Scrap.

JOINT COMMITTEE ON RECLAMATION.

SUBJECT 5—Forest Products.

PAPER—"Accomplishments of Division VI," by W. J. Farrell, secretary, Division VI—Purchases and Stores, American Railway Association.

SPECIAL COMMITTEE—Exchange of Surplus Material.

SUBJECT 8—Control of Shop Manufacturing Orders for Stock Material.

SUBJECT 9—Fuel.

SUBJECT 10—Most Economical Methods of Purchasing and Distributing Material.

SUBJECT 4—Comparisons of Material Stock Reports and Store Expenses.

PAPER—"Economy and Efficiency of Centralized Material Accounts," by L. L. Studer, district storekeeper, Missouri Pacific.

SUBJECT 11—Pricing Methods.

SUBJECT 12—Purchasing Agent's Organization and Office Records.

SUBJECT 13—Stationery and Printing.

SUBJECT 14—Fire Prevention.

Thursday, June 23, 9:30 A. M., Daylight Saving Time

SUBJECT 15—Handling of Materials—Protection from Deterioration.

SUBJECT 16—Standardization and Simplification of Stores Stocks.

PAPERS—Annual Contest:

"Can Abstract Values be Increased?" by William Courage, trucker, Stores Department, Canadian National.

"Interesting and Educating the Stores Employee by Varying His Occupation," by Philip J. Hurley, departmental invoice clerk, Stores Department, Canadian National.

SUBJECT 26—Organization and Methods for Adoption of Material Standards.

SUBJECT 17—Stores Department Safety Practices.

SUBJECT 18—Terminal Railway Storekeeping.

SUBJECT 19—Capacity Loading and Prompt Handling of Company Material Cars, Cost to Railroad of Hauling Company Material.

SUBJECT 21—Purchasing, Storage and Distribution of Equipment and Supplies Used in Dining Cars, Hotels and Commissaries.

SUBJECT 22—Training of Employees in P. and S. Departments.

SUBJECT 24—Lubrication.

SUBJECT 25—Systematic Inspection of, Checking of Weights and Count of Materials Received at Destination.

REPORT OF RESOLUTIONS COMMITTEE.

REPORT OF MEMORIALS COMMITTEE.

REPORT OF NOMINATING COMMITTEE.

ELECTION OF OFFICERS.

Program of Division V—Mechanical

Congress Hotel, Chicago

Thursday, June 23, 9:30 A. M., Daylight Saving Time

Meeting Called to Order.

Address by H. A. Wheeler, president, Railway Business Association.

Address by M. J. Gormley, executive vice-president, American Railway Association.

Address by the Chairman, Silas Zwright, general mechanical superintendent, Northern Pacific.

Appointment of Committees on Subjects, Resolutions, Correspondence, etc.

Unfinished Business.

NEW BUSINESS

Report of General Committee.

Discussion of Reports

Nominations.

Safety Appliances.

Joint Committee on Automatic Train Line Connectors.

Locomotive and Car Lighting.

Automotive Rolling Stock.

Joint Committee on Utilization of Locomotives and Conservation of Fuel.

Electric Rolling Stock.

Specifications for Materials.

Locomotive Construction.

Friday, June 24, 9:00 A. M., Daylight Saving Time

Address by Hon. Frank McManamy, member, Interstate Commerce Commission.

Discussion of Reports

Arbitration.

Prices for Labor and Materials.

Tank Cars.

Loading Rules.

Wheels.

Brakes and Brake Equipment.

Couplers and Draft Gears.

Car Construction.

Election of Officers and Members of General Committee.

Progress in Equipment Continues

Many devices for improvement in locomotive and car operation and maintenance have been developed during the past year

A NOTABLE evidence of faith in the future of the railroad industry in America is contained in the following pages, in which are set forth developments for the improvement of locomotive and car operation and maintenance which have been brought to the point of commercial practicability during the months of uncertainty caused by the general business depression. These cover a variety of materials and devices which range from improvements in lubrication on locomotives to new designs of some of the major locomotive specialties, and from improvements in methods of attachment to designs exercising a major influence on truck operation in the case of cars. Progress in the art of railway transportation is by no means at an end.

A.R.A. Type "E" Coupler

THE culmination of 14 years of study of the type "D" coupler by the A.R.A. Coupler Committee and the coupler manufacturers is the new A.R.A. type "E" coupler which is being manufactured by the American Steel Foundries, Chicago; Buckeye Steel Castings Company, Columbus, Ohio; Gould Coupler Company, New York; McConway & Torley Company, Pittsburgh, Pa., and National Malleable & Steel Castings Company, Cleveland, Ohio. The type "E" coupler is so designed that it may be furnished for rotary or top operation. In the rotary operated type "E" coupler the knuckle is unlocked and opened easily and positively by the use of the operating rod only and its anti-creep feature is positive. These features of coupler service make the rotary operated coupler the preferred form for general use. The same coupler can be fitted by a change of actuating parts only, for either operation.

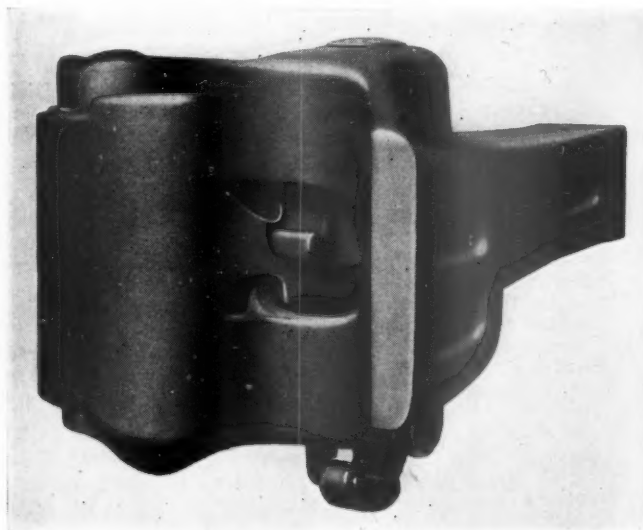
The improvements and advantages claimed for the new type "E" coupler are: Increased strength of knuckle-side wall of the coupler; reinforcement of the front face of the coupler; improved operation; improved lock-to-the-lock; improved top lock lifter; the impossibility of the top lock lifter becoming wedged beneath the anti-creep lug; increased strength of the lock leg and improved support for the lock; prevention of vertical slipover and increased strength of shank.

In the type "E" coupler the top and bottom walls of the head, where they join the side wall above and below the knuckle tail, have been brought closer together and have been joined to the side wall by large fillets. These walls, therefore, surround the knuckle tail more closely with the result that the buffing blows from the knuckle tail are distributed over a larger area and the bending stresses set up in the side wall are greatly decreased. In addition to this, the side wall thickness has been increased $\frac{1}{8}$ in.

In providing reinforcements for the front face of the coupler, four changes have been made: (1) The guard arm has been redesigned to be stronger in keeping with the greater strength of the new shank; (2) the front face thickness has been increased and a more uniform distribution of metal has been secured; (3) the notch provided in the type "D" coupler through the upper front face for the insertion of the lock has been eliminated; (4) the new shank locates the key slot $\frac{1}{8}$ in. higher than the present one thus preventing some of the drooping of the coupler head which had much to do with the breakage of the upper face.

In the type "E" coupler the effective length of the knuckle thrower arm from the center of the thrower pivot to the point of contact between the lock leg and thrower has been increased from 2.5 to 4 in. This increase in knuckle thrower leverage applies to both rotary and top operated couplers. A further improvement in the top operated form has been brought about by the attachment of the top lock lifter to the lock at a lower point on the lock and slightly farther back from the fulcrum. A comparison of the operating efficiency of the types "E" and "D" couplers is shown in the table—the figures in which are the result of actual tests and represent the force required at the end of a 12-in. operating rod handle to operate the couplers.

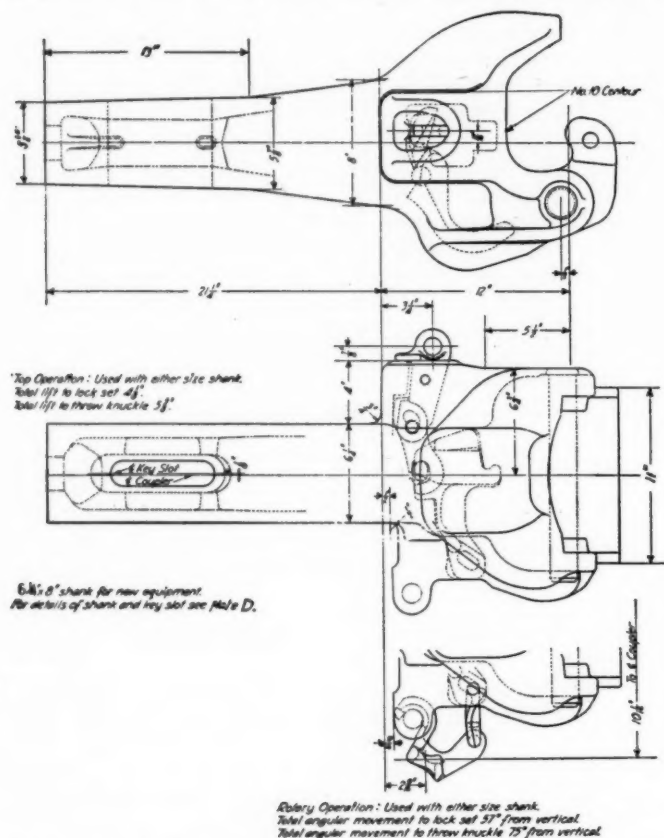
In the rotary operated type "E" coupler, the lock-to-the-lock is made positive by restricting the rearward movement of the lock leg in the lock hole of the coupler, thus insuring positive engagement of that portion of the toggle which underlies the anti-creep lug. In the top operated form a two-part lifter has been provided, the two parts being pivoted together for a limited movement relative to each other. The lower member, which is hooked into the lock lies normally beneath the anti-creep ledge in the coupler head and is positively locked beneath this ledge when the top member is in



A.R.A. Type "E" Coupler

Standard "D" couplers, knuckles, locks and other parts as shown in the Mechanical Division Manual of Standards and Recommended Practice.

To control the absolute interchangeability and the proper relation between fitting parts, the A.R.A. Committee on Couplers and Draft Gears, in conjunction with the coupler manufacturers, has designed over 40 gages and masters, the use of which is required by the



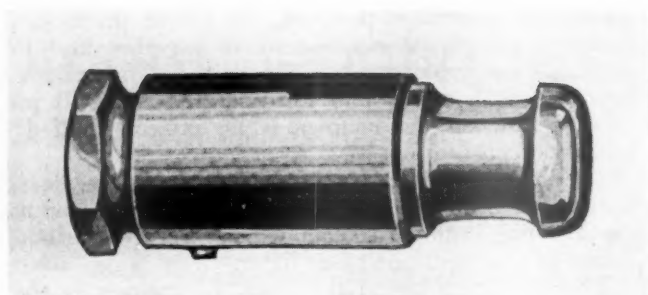
Type "E" Coupler With a 6 1/4-in. by 8-in. Shank for New Equipment

specifications. These gages are used not only for the complete coupler but also for a percentage of the various parts.

The type "E" coupler design was presented at the June, 1930, meeting of the A.R.A. Mechanical Division and was adopted by letter ballot in September, 1930, as recommended practice of the A.R.A., effective March 1, 1931. In the fall of 1931 the type "E" coupler was adopted by letter ballot and became the standard A.R.A. type coupler, effective March 1, 1932. An abstract of the original report, together with detailed drawings of the type "E" coupler were published in the *Railway Age Daily* for June 21, 1930, page 1548-D-26.

Soap Valve Which Dispenses Lather

THE West Disinfecting Company, 42-16 Barnes street, Long Island City, New York, is manufacturing a new type of liquid soap dispensing valve called the Latherator. This valve automatically agitates the soap into a lather before it leaves the outlet. It is claimed by the manufacturers that soap dispensed in lather form will serve from 40 to 50 per cent more persons than when the soap is dispensed in liquid form.



Valve Which Automatically Agitates the Soap Into a Lather

The Latherator is made in three types. The regular battery type by which a number of outlets are served from one central tank system with the small valve outlet over the basin; the Pullman or basin type valve which fits on the basin and is also fed from a central tank, and the self-contained unit which is an individual dispenser with a globe and has a valve outlet. The regular outlet and the Pullman type valve can be attached to the liquid soap supply line in any station washroom without any change except the removal of the old dispensing valves and the substitution of Latherators.

Coil-Elliptic Spring Group For A.R.A. Trucks

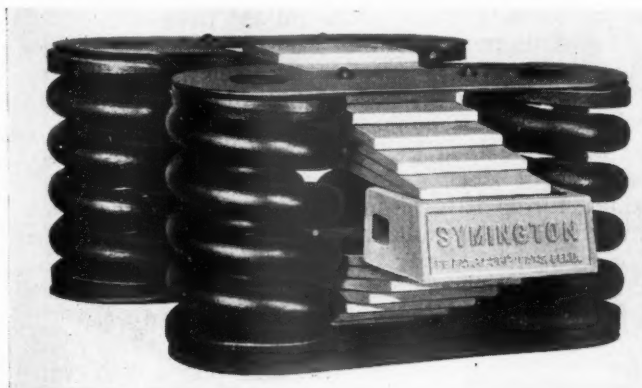
THE Symington Company, 230 Park avenue, New York, is offering a compact form of coil-elliptic spring group for application to existing A.R.A. trucks. This application does not require any alteration to the bolster, side frames or spring plank. The results of the first road test of this spring arrangement were described in the February 27, 1932, issue of the *Railway Age*.

To meet the limitations of space imposed by the



Coil-Elliptic Spring Group for A.R.A. Standard Truck
SIDE FRAMES

A.R.A. design, the group, as illustrated, is normally composed of a single elliptic spring placed transversely and a pair of coil springs, also disposed transversely, and to one side of the elliptic spring. The lack of symmetry is primarily a matter of appearance, as the center of resistance of the combined group falls reasonably close to the transverse center line of the spring plank. Any small eccentricity is effectively balanced by the diagonal placement of the elliptic spring of one



Coil-Elliptic Spring Group for Symington Double-Truss Side Frame

group to that of the elliptic spring on the other side of the truck.

The original and symmetrical form of this spring group comprises a central, transversely extending elliptic spring with two coil springs on either side. It is designed for use with the Symington double-truss side frame which affords a greater area of spring seat.

Car-Washing Equipment

DURING the past year, The DeVilbiss Company, Toledo, Ohio, has developed two new portable outfits for washing railroad passenger cars and motor coaches. One of these is designed primarily for cleaning cars for road service while the other, of somewhat similar design though differing in accessories, is adapted principally to the washing of cars preparatory to painting.

The outfit for washing cars preparatory to painting

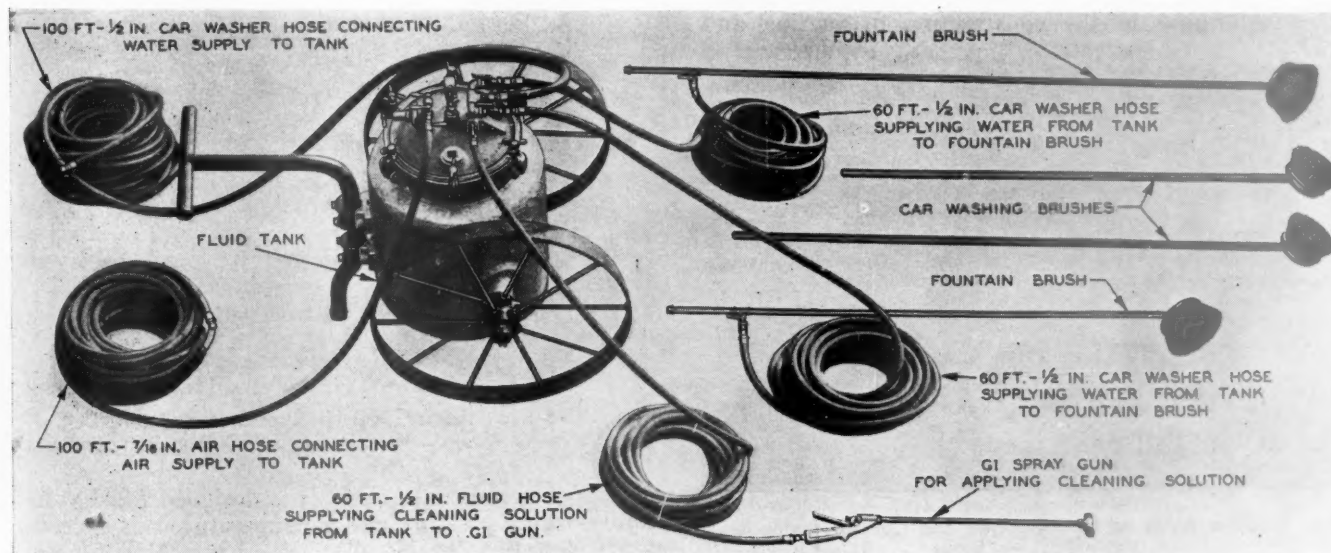
consists of a DeVilbiss type QM-5059 30-gal. pressure feed tank mounted on wheels, a type GI-520 spray gun and a type CW-503 car-washing gun together with the necessary lengths of air, water and fluid hose and connections. This outfit includes one seven-foot and one four-foot hand car-washing brush.

The other outfit used for cleaning cars in road service is similar to the one described above, the principal difference being the inclusion of one four-foot and one seven-foot fountain type brush in addition to the hand brushes. The outfit does not include the type CW-503 car-washing gun.

When using the outfit designed for washing cars preparatory to painting, a two-man crew is used on the exterior of the car. One end of a fluid hose is attached to the tank and the other to the type GI spray gun. A 100-ft. length of air hose is connected from the air line to the regulator on the tank and the 100 ft. length of car washing hose is connected from the main water line to the tank. A pressure of from 40 to 50 lb. is used on the fluid tank. The car-washing hose is then connected to the type CW car-washing gun and to the connection on the tank. A 60-ft. length of air hose is connected to the type CW gun and to the tap on the tank. Full air-line pressure is used with the CW gun. The air and water hose are taped together at intervals of five feet, which aids materially in handling the equipment. The water valve on the CW gun is closed and the air and fluid cocks to and from the tank and guns are opened, as are the air and water valves to the type CW gun. The outfit is then ready for operation.

In washing the exterior of a car for painting, all ventilator screens, guards, windows, baggage racks and furnishings are removed. The work is started at the ventilator sides and deck. The solution is sprayed on with the GI gun held a few inches from the work. A section of from 12 ft. to 15 ft. is sprayed at a time. A man with a long handle car-washing brush follows, scrubbing the surface that has been sprayed. The portion cleaned is washed with water from the type CW gun which is held a few feet from the work and the water is flushed down the side of the car. The full length of the ventilator side and deck is cleaned in this way.

The sides of the car are then treated in a similar manner from the edge of the deck down to the weather strip at the bottom of the window. The car is then cleaned from the weather strip down. Rivet heads are



DeVilbiss Equipment for Cleaning Cars for Road Service

carefully scrubbed and overlapping seams have all dirt and grease removed, and then are washed down.

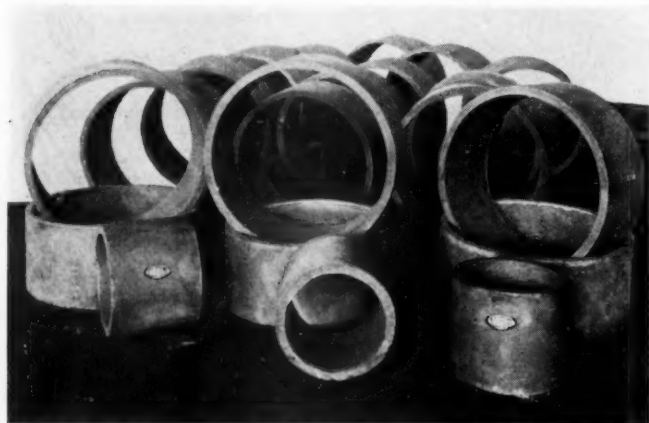
The interior of the car is cleaned in sections of from 12 to 15 ft. Work is started at one end on the upper ceiling and ventilator. The solution is sprayed on, after which the surface is lightly rubbed with a sponge and then rinsed off with the car-washing gun. The cleaned surface is then wiped with a clean sponge, squeezed dry, to remove water drops which might leave spots in drying. The entire sides of the coach are treated in a similar manner. If the trucks are to be cleaned, a full-strength solution is sprayed on them. This is washed off after an interval, using full pressure from the car-washing gun. After it becomes thoroughly dry the car is ready for painting.

The work involved in cleaning cars for road service with the other type outfit is somewhat similar. The cleaning solution is sprayed on the sign board at the top of the car with the spray gun. A section covering about one-fourth of the length of the car can usually be done at one time. In the section, all the surface extending downward from the sign board to the bottom of the car is sprayed at one time. This area, including the windows, is then thoroughly scrubbed. The long handle car-washing brush is used from the sign board to the bottom of the windows, and the short handle car-washing brush from the bottom of the windows to the bottom of the car. Cleaning around the rivets is done with a circular or rotary motion. The short- and long-handle fountain type brushes are used to scrub and wash down the sides of the car and flush down all remaining traces of the cleaning solution.

While the operator using the short-handle fountain brush is finishing this operation on one section of a car, the other man, using the long-handle brush, takes the spray gun and applies the solution on the next section of the car to be cleaned.

Electric-Furnace Iron For Railroad Service

THE Cramp Brass and Iron Foundries Company, now the Foundries Division of The Baldwin Locomotive Works, Eddystone, Pa., has for a number of years been producing a special brand of electric-furnace iron bearing the trade name Elfur. This material is extensively used in the construction of marine and



Group of Elfur Rings to be Machined and Cut for Piston and Valve Packing Rings

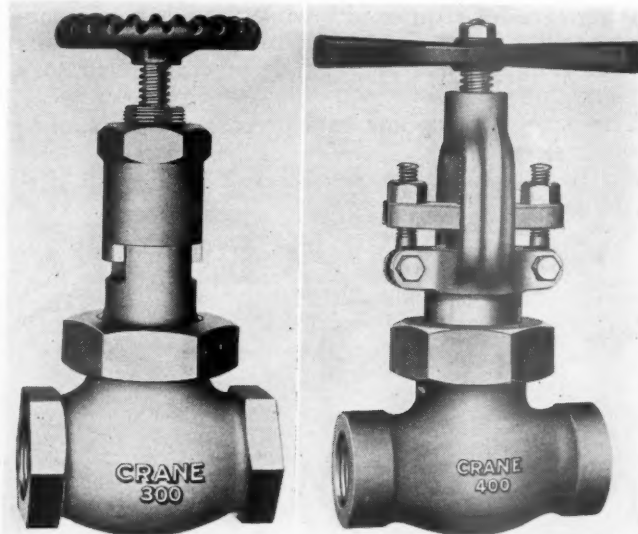
Diesel engines, as well as for such locomotive parts as cylinder bushings, piston bull and packing rings, valve-chamber bushings, valve bull and packing rings, cross-head shoes and hub liners. It is suitable for a variety of parts which are subject to extreme wear.

Elfur iron is manufactured under strict metallurgical control, and is produced through the medium of electric-furnace melting. With this process it is possible to obtain far higher temperatures than are usual with cupola or air furnace methods of melting. This high melting temperature tends to rid the iron, not only of certain of its impurities, but also of its occluded gases, while its fluidity is greatly increased. This has the effect, aside from the composition of the iron, of producing a hardness in the metal through density—a result often obtained in other irons by using excessive quantities of steel. Another result of the method of manufacturing Elfur iron is to alter the graphitic constituent from the globular or large flake form to that of films which overlap each other so that, when subjected to abrasive conditions, the iron takes on a glazed surface, which increases its resistance to wear.

One of the illustrations shows a group of rings which, after machining, will be cut into piston and valve packing rings. The conditions under which machinery of all classes is being operated are daily becoming more severe and exacting. Elfur iron, manufactured to rigid specifications in a foundry of the most modern type, is offered as a material that will successfully meet the most difficult requirements.

Valves For High Pressures and Temperatures

THE Crane Company, 836 South Michigan avenue, Chicago, recently placed on the market two valves which have been specially designed for high pressure and temperatures. Valve No. 300 has a hard metal body, renewable Exelloy seat, plug type alloy disc



Left: Valve Designed for 300-Lb. Pressures and 550-Deg. F. Right: Valve for 300-Lb. Pressures and 750-Deg. Temperatures

and outside screw and yoke. It is designed for 300 lb. steam working pressure and a temperature not exceeding 550 deg. F. The No. 400 valve has a Monel metal

body, outside screw and yoke, and renewable plug type seat and disc. This valve is designed for 300 lb. pressure and a total temperature not exceeding 750 deg. F.

The No. 300 valve is designed so that the threads of the valve stem are out of the path of the steam and consequently less subject to the deteriorating effects of high temperatures and wear caused by incrustations of scale. The yoke is designed to be as compact as possible without sacrificing accessibility for packing.

Monel metal is used for the body of the No. 400 valve because of the resistance of this metal to pressures, temperatures and corrosion. The ends of the body are reinforced by heavy bands and have long, accurately cut threads to insure tightness. The bonnet is also of Monel metal and is held pressure-tight to the body by a union ring of nickel alloy. The yoke is cast manganese bronze. The stuffing box is designed to eliminate the trouble which frequently occurs where a large ring with fine threads is used to hold the glands. The one-piece gland and flange of nickel alloy is held in place by two steel eye-bolts. When the packing is being replaced or adjusted, these I-bolts swing out of the way. They are hinged to wings built on the yoke. The stem and seat of the No. 400 valve are also of Exelloy, a metal which has a minimum tensile strength of 100,000 lb. per sq. in.

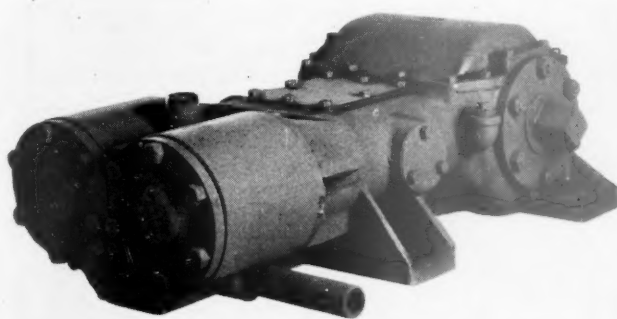
Locomotive Stoker Of Small Capacity

THE Standard Stoker Company, Inc., 332 South Michigan avenue, Chicago, to meet a demand for a stoker of smaller capacity than the present designs, has built one of rugged, simple construction. The design and selection of each separate part was made to procure maximum service life, with minimum weight. Careful attention was also given to accessi-

bility to all parts, both for original application and for repairs in enginehouses and back shops.

Distribution of the fuel over the grate area is controlled by the fireman from manually operated jet valves, which are contained in a manifold located in a convenient place on the back head of the boiler. Numerous tests have been conducted with different kinds and grades of coal to obtain the best and most flexible distribution of coal.

One of the illustrations shows a general view of the stoker which, in appearance, is similar to the present Type BK or back head design. A feature of this design is the location of the automatic fire door, which is



View of the Stoker Engine From the Front or Cylinder End

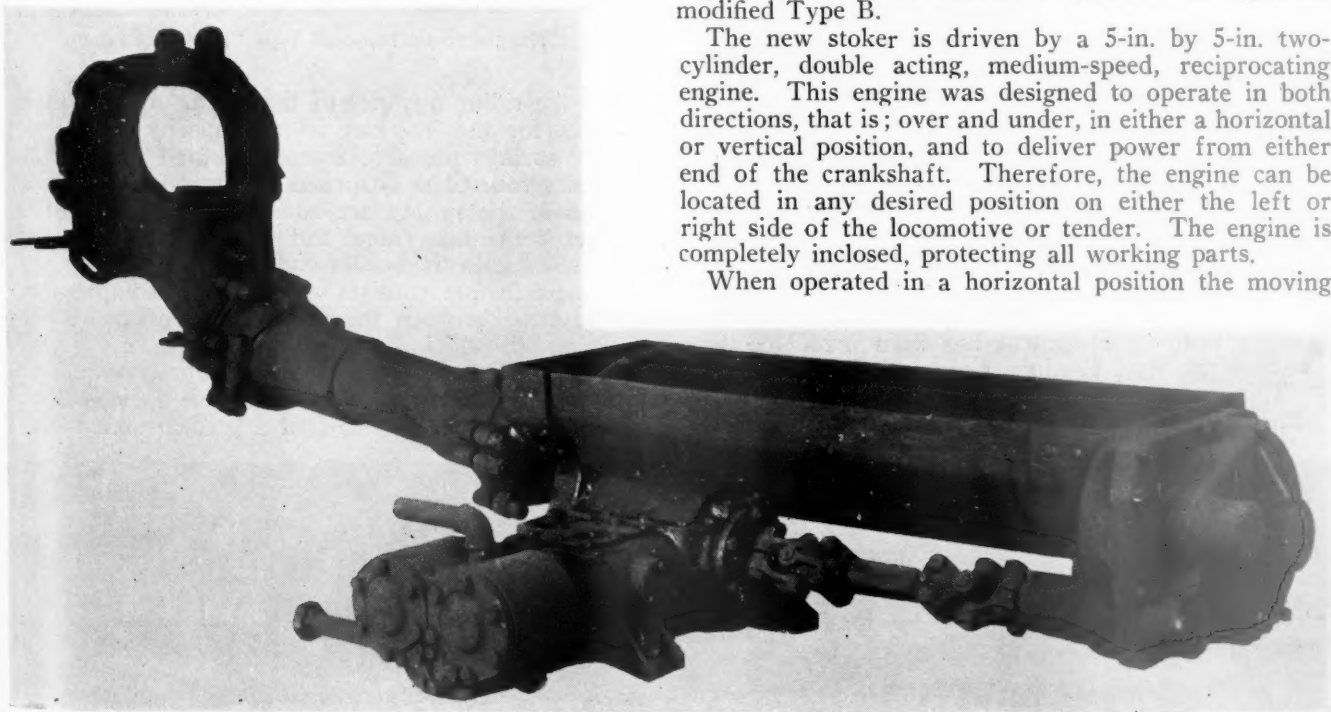
on the rear of the stoker discharge box, requiring a minimum opening in the back head of the boiler.

The design of the tender trough is simple. The front of the tender trough, support and tender bowl are cast integral. The rear of the trough and the gear housing are also in one piece. Both these parts are made of cast steel. The steel plate (trough proper) is riveted to the end castings. This design of trough reduces maintenance cost, as no fabrication is required. The only wearing piece in the trough proper is a steel plate.

While the illustration shows the back-head type of stoker, the manufacturers will furnish a type discharging coal inside of the firebox, or similar to their present modified Type B.

The new stoker is driven by a 5-in. by 5-in. two-cylinder, double acting, medium-speed, reciprocating engine. This engine was designed to operate in both directions, that is; over and under, in either a horizontal or vertical position, and to deliver power from either end of the crankshaft. Therefore, the engine can be located in any desired position on either the left or right side of the locomotive or tender. The engine is completely inclosed, protecting all working parts.

When operated in a horizontal position the moving



Standard Stoker Designed for Light Power

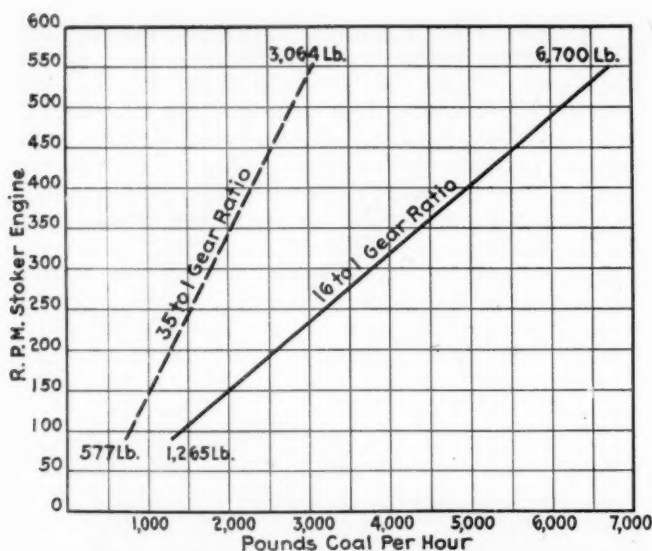


Chart Showing the Capacity Ranges of the Standard Small-Capacity Stoker

parts are lubricated by the splash system and when in a vertical position, or on an angle, the force-feed system is used to insure proper lubrication of all moving and wearing parts. The reversing of the engine is accomplished by a simple and positive method, namely; by changing the direction of the steam flow in a reversing valve, which is conveniently located in the piping system. This method entirely eliminates a reversing mechanism, built into the engine, which is subjected to wear and failure.

The minimum capacity of the stoker is approximately 575 lb. and the maximum capacity approximately 6,700 lb. of coal per hour. The chart shows the range of capacities for this stoker. The solid line shows the capacity with a 16 to 1 gear ratio, the minimum being 1,265 lb. of coal per hour at 90 r.p.m. of the stoker engine and 6,700 lb. at 550 r.p.m. The capacity with a 35 to 1 gear ratio, is shown in dotted line, the minimum being 577 lb. of coal per hour at 90 r.p.m. of the stoker engine and a maximum capacity of 3,064 lb. of coal per hour at 550 r.p.m. Range capacities between the gear ratios mentioned can be obtained by gear changes in the housing at the rear of the tender trough.

Cast-Steel Underframes With Integral Hoppers

A FURTHER development in cast-steel structures for railroad equipment has been made by the General Steel Castings Corporation, Eddystone, Pa. This company recently furnished 25 Commonwealth cast-steel underframes with integral hoppers to

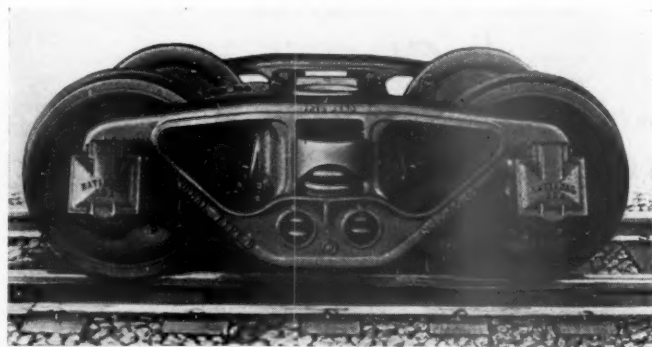
the Kansas City Southern to be incorporated in the construction of 70-ton general service hopper-bottom gondola cars, which the railroad is building.

The use of the cast-steel underframe eliminates 183 structural parts and 2,250 rivets in the construction of these cars. The hoppers, center sills, draft sills, body bolsters, and the end and side sills are incorporated in the cast-steel structure.

The cars are equipped with Ajax cast-steel hopper doors, Miner A-22-XB draft gears, vertical plane swivel coupler yokes and Type E couplers of rotary design with swivel butt shank. The latter were furnished by the National Malleable & Steel Castings Company.

Freight-Car Truck With Graduated Spring Resistance

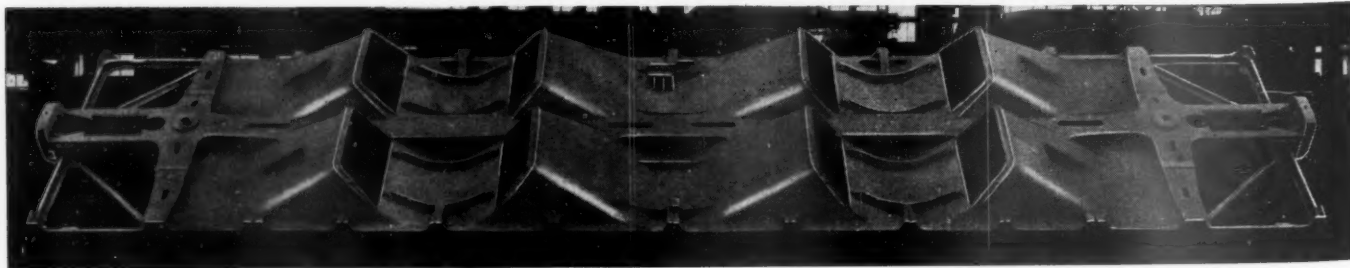
ONE year ago the National Malleable and Steel Castings Company, Cleveland, Ohio, introduced the National Type B truck (described in the *Railway Age* for June 20, 1931, page 1211). This truck embodied such features as increased spring capacity, quick wheel change, light weight and oversolid protection of the springs. During the past year a new feature has been added for the purpose of improving still



The Improved National Type "B" Truck

further the riding qualities of the truck. In the Type B trucks for the 40- and 50-ton capacity cars four Class E springs per side frame are used and in the 70-ton size four Class G springs are used. In each design two of the springs are housed within the tension member of the side frame and the other two springs are housed within the bolster end.

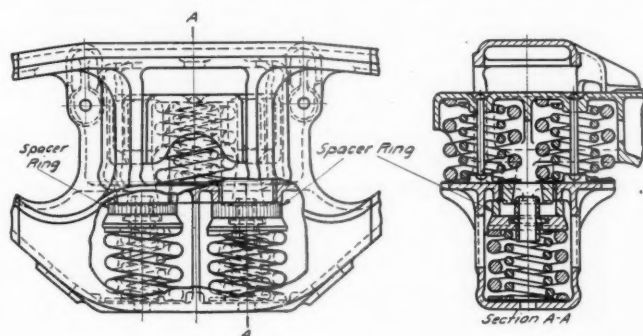
The new feature consists in the use of compression rings inserted between the top of each of the lower springs and the top wall of the tension member. These rings hold the two springs under compression. The bolster sleeves do not contact with these springs until the bolster has moved downward a predetermined dis-



Cast-steel Underframe for 70-Ton General Service Gondola Cars

tance. Preferably one ring of each pair is thicker than the other, so that its spring is held under a greater amount of initial compression. The thickness of these rings is such that the car when light or lightly loaded is carried entirely on the two upper springs in the bolster. The car under average load is carried by the two upper springs and one of the lower springs and under full load by all four springs.

A spring carrying a dead load has a definite period of oscillation, the rate of oscillation depending upon the amount of load and the stiffness of the spring. The



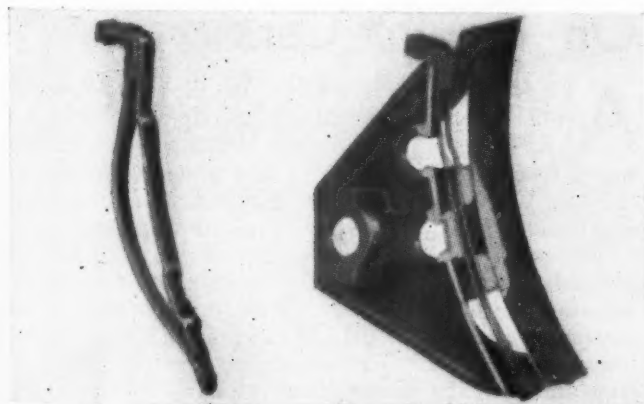
The Spacer Rings Above the Lower Springs Provide a Graduated Spring Resistance

National Type B truck, by carrying certain of its springs under initial compression and bringing them into action after a definite amount of bolster movement, is intended to break up this oscillation period and thus to provide smooth riding at all speeds.

This new spring arrangement, by carrying the light car on two springs per side frame, a medium load on three springs and a full load on four springs, produces a graduated spring resistance or a progressive spring capacity which automatically adjusts itself to the load being carried.

Master Brake-Shoe Key

WITH the object of meeting the problem of worn brake heads and component parts, the Buffalo Brake Beam Company, 32 Nassau street, New York, has developed what is known as the Master brake-shoe key. This key, which is shown in the

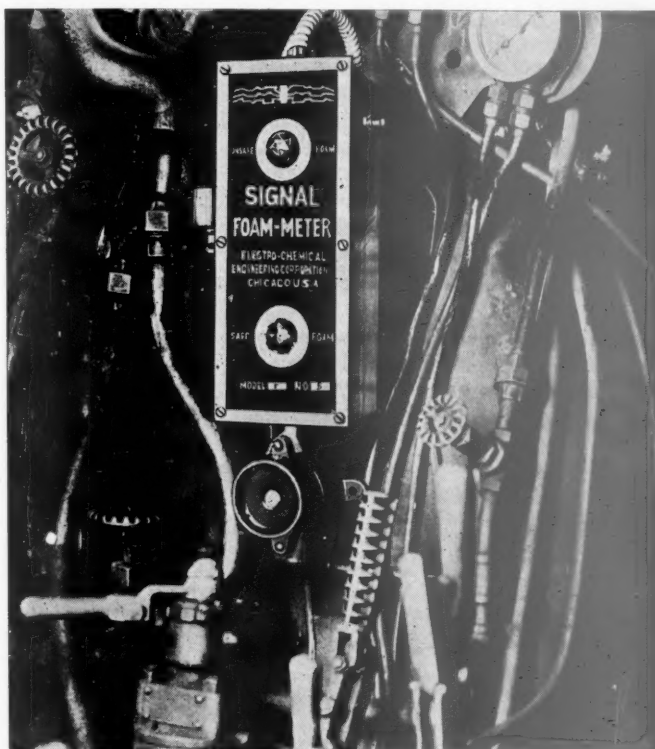


Master Brake-Shoe Key Provides Adjustment for Rough Castings

illustration, is made of spring steel and provides adjustment for inaccuracies which frequently occur in rough castings. It insures rigid contact of all parts under any conditions, thus eliminating vibration and wear.

Foam-Meter For Locomotives

AN electric foam-meter which indicates the foam conditions in a boiler and which automatically opens and closes a blow-off valve when that is necessary, is now being marketed by the Electro-Chemical Engineering Corporation, a subsidiary of the Pyle-National Company, Chicago, Ill. The condition of foam in the boiler is detected by two pairs of electrodes set into the top of the boiler above the forward end of



Signal Foam-Meter Applied to the Boiler-Head of a Locomotive

the firebox. One pair of electrodes is longer than the other. In each case, one electrode of each pair is insulated with Bakelite and the other is in contact with the boiler shell. The balance of the equipment consists of a signal foam-meter with yellow and red light indications placed on the boiler head, an automatic $\frac{3}{4}$ -in. air-operated blow-off valve and several relays.

When the foam rises high enough to reach the long pair of electrodes they are short circuited by the foam. This completes a circuit which includes a sensitive relay that receives its current from the headlight generator or a battery. The relay in turn causes the $\frac{3}{4}$ -in. blow-off valve to open and lights the lower or yellow signal in the foam-meter. After the boiler has been blown down sufficiently, the foam subsides below the end of the electrode, thus breaking the electrical circuit through the relay and simultaneously the secondary circuit operating the Electromatic blow-off valve, thus closing the valve.

The valve operates only after the foam has contacted the long pair of electrodes for at least 15 seconds. This is accomplished by a thermostatic time delay placed in series with the electric circuit operating the Electromatic blow-off. This time delay prevents undesirable frequent operation of the blow-off valve due to momentary contact of foam or water with the electrodes. Such momentary contact may be caused by surging or splashing of the water in the boiler.

Should the foam rise high enough to reach the short pair of electrodes, the red light in the foam-meter indicates an unsafe foaming condition, which calls for the manual operation of a main blow-off cock to supplement the Electromatic blow-off.

Gasoline Locomotives For Light Switching

TO meet a demand for a light switching locomotive which can be maintained and operated at a minimum of expense, the Lima Locomotive Works, Inc., 60 East Forty-Second street, New York, has placed on the market two gasoline locomotives of 100 hp. and 200 hp. capacity. Both locomotives are of the mechanically driven four-wheel type and have the power, traction and rugged construction essential to dependable operation under a wide variety of industrial conditions.

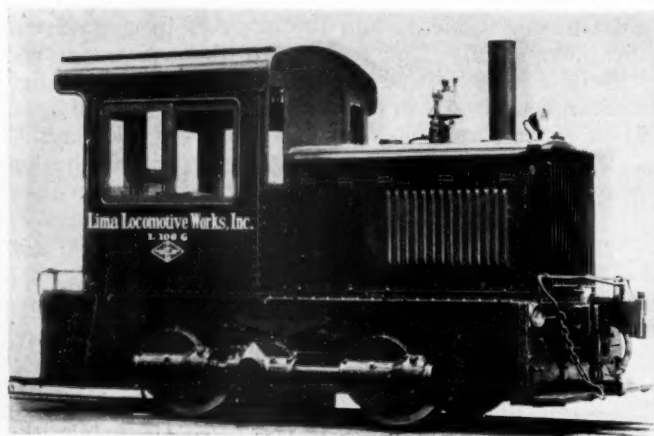
All driving connections between the motor and the wheels are accomplished by means of gears and clutches.

Specifications for Lima Gasoline Locomotives

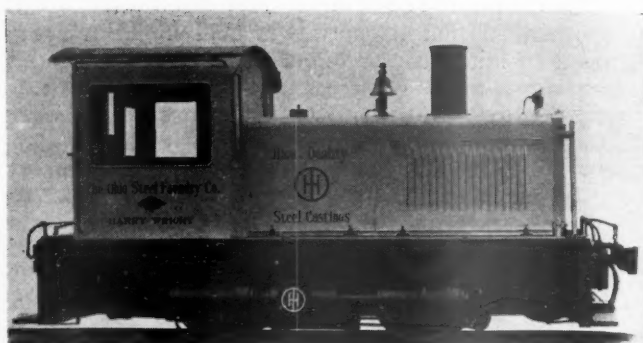
	Type L-100-G	Type L-200-G
Weight in working order..	30,000 lb.	60,000 lb.
Gage of track—All gages..	36 in. up to 56½ in.	36 in. up to 56½ in.
Wheel base	6 ft.	7 ft.
Number of driving wheels..	4	4
Diameter of driving wheels	33 in.	38 in.
Standard height	10 ft. 3 in.	10 ft. 6 in.
Length over bumpers.....	14 ft. 0 in.	18 ft. 4 in.
Width for 56½-in. gage...	8 ft. 10 in.	10 ft. 0 in.
Factor of adhesion.....	3.59	3.43
Fuel capacity	50 gal.	100 gal.
Drawbar pull at various speeds *	8,350 lb. at 3 m.p.h. 5,600 lb. at 6 m.p.h. 4,200 lb. at 9 m.p.h. 3,100 lb. at 12 m.p.h. 2,300 lb. at 15 m.p.h.	17,500 lb. at 3 m.p.h. 15,000 lb. at 4.5 m.p.h. 9,200 lb. at 7.2 m.p.h. 6,700 lb. at 9.5 m.p.h. 4,100 lb. at 15 m.p.h.

* Actual pulls developed on dynamometer tests.

This positive drive to both axles makes all four wheels driving wheels. It is a similar drive to that used on Shay geared locomotives. As no chains or side rods are used, maintenance and adjustments are minimized.



Lima Gasoline Locomotive Type L-100-G



Type L-200-G Gasoline Locomotive Built by Lima

All shafts and axles are equipped with roller bearings which are completely enclosed and run in oil.

The spring arrangement provides a true three-point suspension without the use of cross-equalizers. The locomotive adjusts itself readily to rough and uneven track, and speedy operation is made possible without danger of derailment.

A special air-brake system has been developed for this service. It operates the brakes on cars having standard automatic air-brake equipment directly in conjunction with the air brake on the locomotive. This system enables these locomotives to spot cars accurately and quickly and to safely descend steep grades with heavy loads. The short wheel base permits the locomotives to negotiate sharp curves, often found around industrial plants.

A standard Hercules straight type, four-cylinder engine, 6¾ in. by 7 in., delivering 100 hp. at 1,200 r.p.m., equipped with electric starter, is used on the Type L-100-G locomotive, while a Le Roi eight-cylinder, V-type engine, 6¾ in. by 7 in., delivering 200 hp. at 1,000 r.p.m., with electric starter, is used on the Type L-200-G locomotive.

The locomotives possess many advantages for industrial work. They have all the power required for a wide variety of industrial operations. Their distinctive type of drive is superior to conventional drives, as all chains, rods, and adjustable parts are eliminated. Maximum power is transmitted to the driving axles, with minimum friction, resulting in a powerful, efficient unit that can be operated under the widest range of conditions with minimum maintenance.

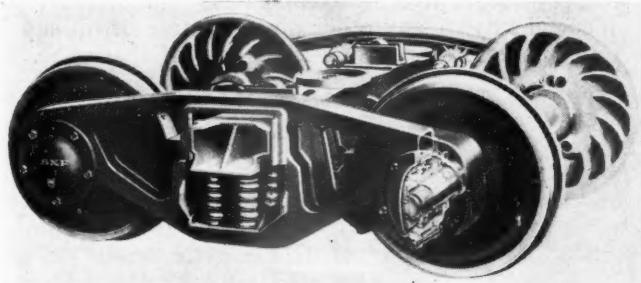
Roller Bearings On Freight Cars

AFURTHER development in the application of roller bearings to railroad equipment is that of SKF journal bearings to A.R.A. standard four-wheel trucks with cast-steel side frames. The ends of the standard side frame are modified, as shown in the illustration, for the application of the bearings.

The outer race of the bearing fits into the end of the side frame, which feature eliminates the box required for plain bearings. The top portion of the housing bore is finished 13.7795 in. for 150 deg. around the circumference. The remaining portion of the circumference of the housing bore is enlarged to a diameter of 14½ in. and is machined. This arrangement permits the frame to be lifted free of the outer race of the bearing. The bearing covers, front and back, are

bolted directly to the frame. This bearing application to freight cars has been developed by SKF Industries, Inc., 40 East Thirty-Fourth street, New York.

The inner race of the bearing is secured to the axle by a split tapered sleeve, a practice which has been followed by the manufacturers in applying roller bearings to railroad equipment having outside journals. The bearings are changed by applying a jack under the pad



SKF Bearings Applied to the A.R.A. Standard Cast-Steel Truck

on the frame, directly below the journal. The frame can be lifted clear of the outer race by removing the front cover, locking key, locking nut and tapered sleeve. With the tapered sleeve removed, the entire bearing can be slid off the axle.

The feature of this roller-bearing application is the split tapered sleeve, which facilitates the assembling and disassembling of the bearing, and permits the bearings to be removed and replaced without removing the axle from the truck.

Power Reverse Gear Has Poppet Exhaust Valves

THE Type M-1 power reverse gear, recently placed on the market by the Barco Manufacturing Company, Chicago, is designed to incorporate several new features that make for simplicity, fewer operating parts, dependability, and lower cost of maintenance. The new gear is particularly adapted for use on switching and transfer locomotives, but is also recommended for road locomotives where a cushion-type balanced gear is preferred.

An entirely new design of operating valve is used

in this gear, providing a small rotary valve for admission of air to either end of the cylinder and providing a separate poppet-type valve for exhausting the air from each end of the cylinder.

The combination of the rotary and the poppet valves provides accurate adjustment and maintains the point to cut-off closely, due to the sensitivity of the poppet exhaust valve, which may be easily adjusted without removing any part from the reverse gear or locomotive. The valve is so designed that the operating lever or mechanism may be used on either the inside of the cylinder next to the boiler or on the outside of the cylinder away from the boiler, whichever provides the best reach-rod connection to the quadrant lever.

The piston is of the conventional cup-packing type. The cylinders are 10½ in. in diameter instead of the usual 10 in., giving the gear considerably more power to move the modern heavy locomotive valve gear.

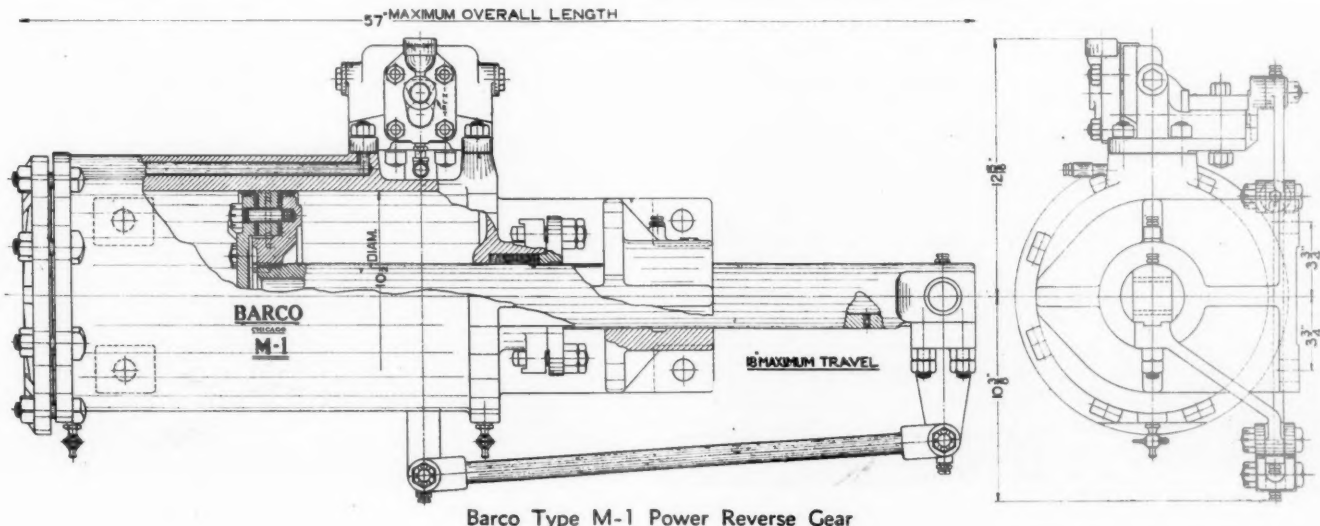
Another entirely new feature is incorporated, not previously used in power reverse gears, by providing a 6-in. piston-rod bearing, cast integral with the cylinder, in front of the piston-rod packing, thus giving the piston-rod the proper support without the expense of maintaining guides and crossheads. This arrangement relieves all strain on the piston-rod packing.

A hollow piston-rod is provided with a tell-tale hole so that any leakage past the cup packing may be readily detected without any labor being required or time being wasted.

This gear is entirely different from the Barco Type B-4 gear, as it is a cushion gear held in position by balanced pressures, whereas the B-4 gear is a positive-lock gear, not held in position by balanced air pressures. The Barco Manufacturing Company expects to continue to furnish the Type B-4 gear, the Type M-1 gear being offered to those who prefer a cushion-type balanced gear.

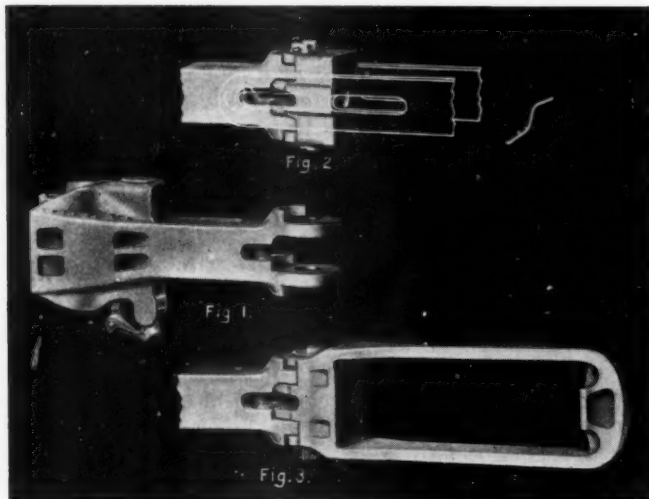
The A. R. A. Swivel Type "E" Coupler

THE American Railway Association, after consideration of the recommendation by its Coupler and Draft Gear Committee, adopted as alternate standard the swivel-shank coupler and necessary swiveling attachments shown and described in this article. This



Barco Type M-1 Power Reverse Gear

action was the result of increasing demands by various railroads for a single standard swiveling type coupler for freight-car service. This device was accordingly adopted by letter ballot in 1931, becoming effective as alternate standard of the American Railway Association on March 1, 1932. The swivel type coupler is manufactured by the following companies in the United States and Canada: American Steel Foundries, Chicago; Buckeye Steel Castings Co., Columbus, Ohio; Gould Coupler Company, New York; McConway & Torley Corp., Pittsburgh, Pa.; National Malleable & Steel Castings Company, Cleveland, Ohio; The Cana-



Type "E" Swivel-Shank Coupler and Attachments

dian Steel Foundries, Ltd., Montreal, Que., and the Dominion Foundries & Steel, Ltd., at Hamilton, Ontario.

The coupler body shown in Fig. 1 comprises an A.R.A. standard coupler head and parts, with a standard shank section terminating in hinge loops which fit into corresponding pockets in the butt casting or swivel yoke.

The swivel butt casting shown in Fig. 2, when connected to the swivel-shank coupler, using the swivel pin, forms a complete coupler for application to the horizontal yoke.

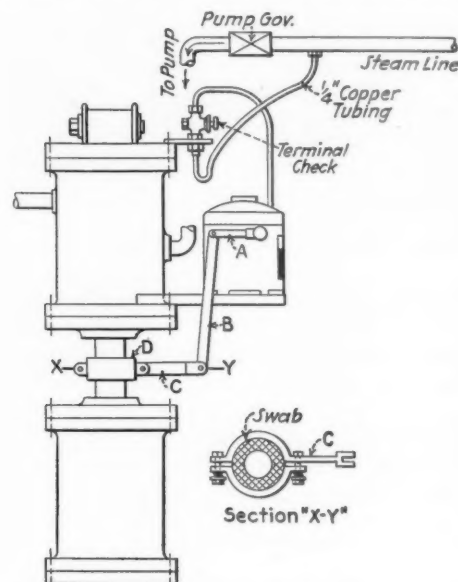
When the swivel-shank coupler is applied to the vertical yoke arrangement, it is attached directly to the front of the swivel yoke as shown in Fig. 3, using the same standard swivel pin. The swivel pin, which is furnished under the A.R.A. specifications for coupler-knuckle pivot pins and swivel pins for swivel-shank couplers, is common to both types of attachment. The pin is in quadruple shear when under draft, but is relieved of buffing stresses by elongated pin-holes in the swivel shank.

These stresses due to buffing are sustained by the shank loops and also by auxiliary shoulders on the top and bottom of the shank.

Tests conducted by the Mechanical Committee of the Coupler Manufacturers, under the supervision of the A.R.A. Coupler and Draft Gear Committee, have shown that the swivel shank coupler compares favorably with the standard rigid shank coupler applied with similar yoke arrangement. Reference can be made to 1931 Proceedings of American Railway Association, Division V, Mechanical, pages 425 to 444, inclusive, for complete details of test results. Complete specifications, including tables of comparative weights, may be found in the A.R.A. Manual, Section A, pages 41 to 59, inclusive.

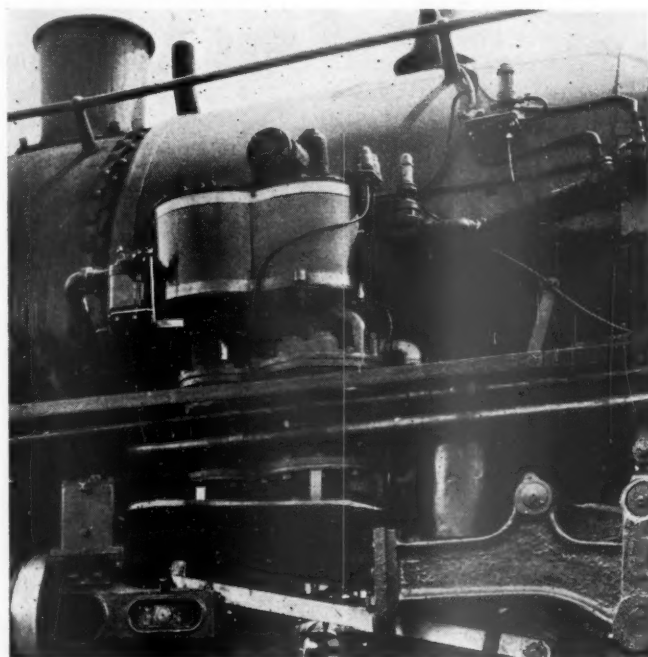
Force-Feed Lubricators For Air Compressors

THE Q & C Company, 90 West street, New York, has developed a further application of its Bosch Type AROB mechanical force-feed oil lubricator whereby locomotive air compressors can be lubricated independently of any other power source or oil supply. Air compressors operate a large part of the time when



Sketch Showing the Application of the Mechanical Lubricator to an Air Compressor

the locomotive is standing. During such period, no oil is received from lubricators the operation of which depends on the movement of the valve gear. There are also special demands on locomotive compressors when they are required to operate at capacity when the engine is standing. Unless the compressor is oiled by hand, which is difficult to do satisfactorily, continued



Bosch Type AROB Lubricator Applied to an Air Compressor

operation over an extended period of time will have serious results because of the lack of adequate lubrication.

The Type AROB lubricator has an oil capacity of 3.25 pt. and weighs 22 lb. empty. It is designed for continuous service against resistance pressures up to 375 lb. per sq. in. Any number of feed outlets up to 10 can be obtained. In the application shown in the two illustrations only one feed into the air-compressor steam line is provided. However, a second feed line to lubricate the piston rod and feeds to other points can be installed if desired without splitting the lines.

The drive mechanism and pump units are essentially the same as in other Bosch types. The pump shaft can operate at a maximum speed of 10 r.p.m. The rate of oil feed recommended for the steam line is from 3 to 4 drops per 100 strokes of the compressor. The lubricator, at maximum speed, can feed 4.08 fluid ounces of oil per hour from each outlet.

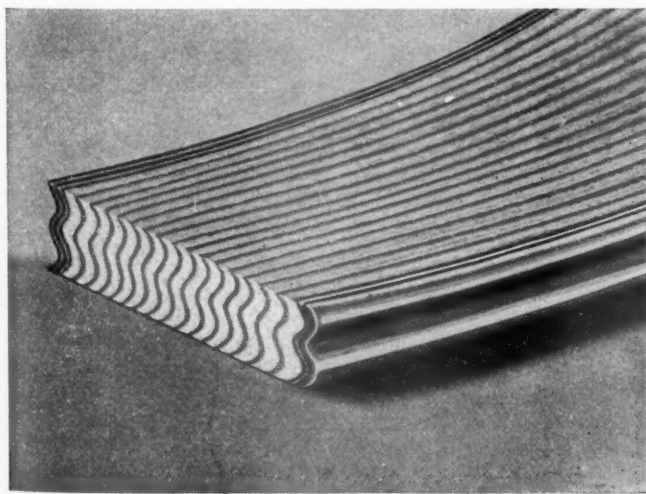
The lubricator drive is connected, as shown in the drawing, to the piston rod of the compressor. The connection at the piston rod consists of a swab *D* to which is clamped the arm *C*. The clamps around the swab *D* are secured by two bolts which are provided with coil springs so that wear on the swab is taken up automatically. A feed line from the lubricator to the swab can be applied, as already mentioned, to lubricate the piston rod.

The ability of the swab to move with the piston rod depends largely on the binding action of the swab around the rod. The arm *C* is connected to one side only, which causes the swab and holding clamps to twist vertically as the rod moves.

The arm *C* actuates the connecting link *B* which in turn operates the oscillating arm *A*. A slight vertical movement of the swab *D* is sufficient to operate the lubricator pumps.

An Expansion Gasket

TO meet the requirements demanding safety against any pressure or temperature, the Garlock Packing Company, Palmyra, N. Y., has recently developed a type of gasket known as the Guardian. The manufacturers also developed this gasket to resist the corrosive effect of gases and liquids, maintain tight joints



Gasket Designed to Meet the Requirements of Any Pressure or Temperature

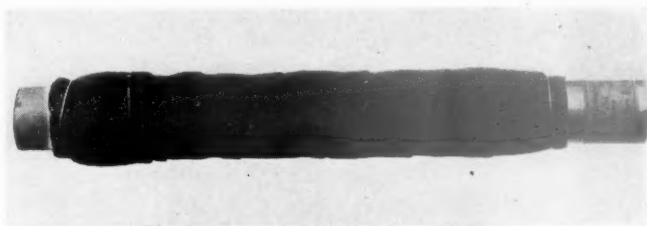
under changing temperatures, and continued resiliency in service. Patents are pending on this new product.

This gasket is designed for service on boilers, pipe lines or other equipment subject to frequent or rapid temperature changes or on jobs where vibration is encountered. The construction of the gasket is such that it serves in the capacity of an expansion joint, adjusting itself without leakage, to the expansion and contraction of the joint. The tightening of the gasket in the joint is said not to destroy the compression and rebound qualities which it possesses.

Insulating Tape For Locomotive and Car Piping

THE new design Kay-N-M locomotive and car insulating tape, manufactured by Keasbey & Mattison Company, Ambler, Pa., has a lip or feather edge that laps over the thick edge when spiralling around the pipe.

This lap prevents separation and adds to the insulating value. The tape is weatherproofed with a non-



Kay-N-M Locomotive and Car Insulating Tape

flammable black material that will not harden and crack off, thereby saving the cost of labor and paint. This tape is complete in itself, requires no covering, is flexible and can be taken off and reapplied.

Galvanized Sheets to Which Paint Sticks

THE painting of newly galvanized sheet metal is usually a troublesome problem. Paint does not adhere well to a freshly galvanized surface. To eliminate paint spalling, it has sometimes been necessary to weather galvanized sheets through exposure to the elements. This expedient cannot be applied to many types of work. Another expedient has been to etch the surface artificially with acids. However, this not only represents additional expense, but sometimes the acids etch too deeply into the protective zinc coating.

To eliminate these difficulties The American Rolling Mill Company, Middletown, Ohio, began research investigations several years ago with a view to developing a galvanized sheet which would combine the protective advantages of a uniform, full-weight zinc coating, with a fine textured surface which could be painted immediately after installation. The efforts succeeded, and the sheet has been named Paintgrip.

The Armco Paintgrip treatment does not reduce the

weight of the coating. The Paintgrip treatment holds tenaciously to the zinc, and at the same time grips paint.

In mechanical pulling tests, it has been found that the bond between the galvanized surface and the first coat of paint is actually better than the bond between a first and second coat of paint.

Paintgrip is adapted for use in freight and passenger car roofs, as well as for other galvanized installations where appearance and protective qualities are desirable. The Paintgrip finish is supplied either on galvanized Armco ingot iron or Armco steel. Sales of this material in the railroad market are handled by the Armco Railroad Sales Company, Middletown, Ohio.

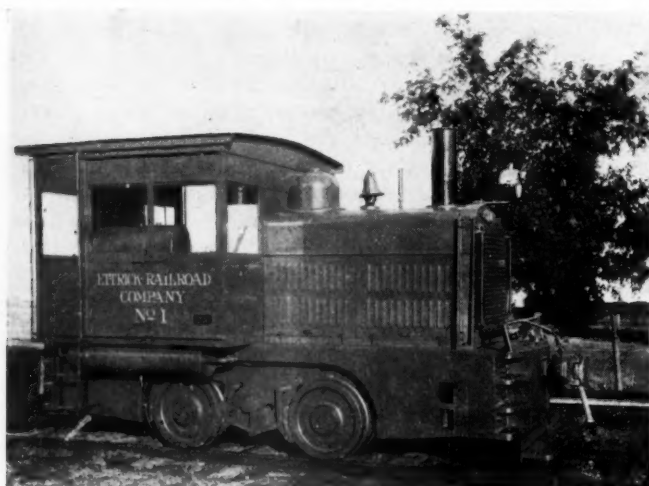
Mechanical Transmission For Gasoline Locomotives

THE demand for a locomotive adapted to railroad requirements in handling traffic in small switch yards, on secondary branch lines and on many short lines, has led The Whitcomb Locomotive Company, Rochelle, Ill., to develop and incorporate a num-



Clutch Parts in the New Whitcomb Mechanical Transmission
ber of improvements in its mechanical-drive gasoline locomotives.

The Whitcomb engineers have designed a transmission which gives practically the same results as the synchro-mesh transmissions, which are coming into



Whitcomb 30-Ton Mechanical-Drive Gasoline Locomotive

common use today. In this transmission, the alloy-steel gears are in constant mesh and speed changes are effected by means of jaw clutches. This eliminates all clashing and breaking of gears and results in a quiet-running and easy-shifting transmission, with resultant long life and low cost of upkeep. All transmission shafts are of alloy steel, which are carried on ball or roller bearings, and in the Whitcomb design the transmission case is not called upon to transmit any power or driving strains.

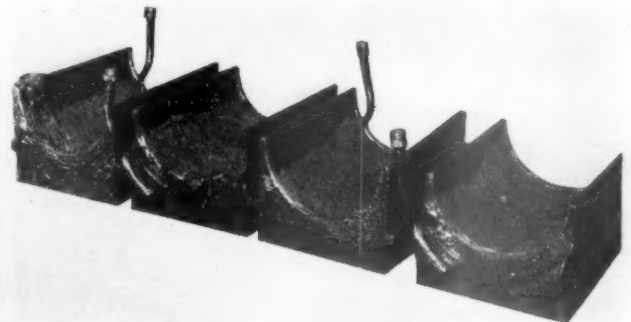
In heavy switching work of this character the locomotive clutch must be practically fool-proof. It must be simple in design and easy of operation, readily accessible for inspection and repairs, with a high coefficient of friction, great flexibility and no need of constant adjustments. The Whitcomb cork insert clutch is designed to meet all of these requirements.

Whitcomb engineers have recently made a number of important improvements in this clutch, among which is a new method of air operation. This allows the clutch to be engaged or released by a slight pressure of the driver's foot upon the clutch pedal and results in smooth and easy acceleration. An improved clutch brake, mounted on the clutch shaft, brings the clutch to a complete stop before the jaw clutches in the transmission are engaged prior to starting the locomotive. With a little practice, it is said that an operator will have no difficulty in shifting gears.

The locomotive illustrated is one of the types now being equipped with the new Whitcomb mechanical transmission. This locomotive weighs 30 tons and has a starting tractive effort of 15,000 lb. It is equipped with a Le Roe six-cylinder gasoline engine which develops 175 hp. at 1,200 r.p.m. and 169 hp. at 1,000 r.p.m. The locomotive is operated by the Ettrick Railroad Company, Ettrick, Wis.

Pneumatic Lubricator For Engine-Truck Journals

BECAUSE of the relative inaccessibility of engine-truck journal boxes, as well as the unusually severe service encountered by these journal bearings, the question of proper lubrication has long been a serious one, intensified in recent years by the general



Unglazed Condition of the Packing in Four Truck Boxes after 10,033 Miles

extension of locomotive runs. As a means of overcoming difficulties with engine-truck lubrication, the Christy pneumatic lubricator has been developed and applied to over 60 mountain-type locomotives on the Illinois Cen-

tral. This lubricator, now supplied by the Locomotive Firebox Company, Chicago, is also adaptable for the lubrication of trailer-truck and tender-truck journals, providing a ready means for forcing oil under pressure into the standard waste-packed journal box at predetermined intervals by the manual operation of a simple air-control valve in the cab. The lubricator works whether the locomotive is standing or operating at high speed and may be used to supply normal lubrication, or to permit bringing a train in, when an emergency such as a hot box develops, without delay, cut journals or the possibility of bearings being damaged by the application of water.

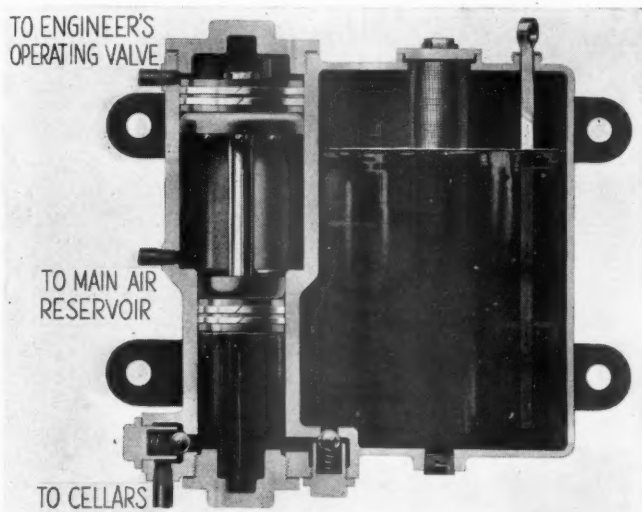
The Christy lubricator is simple in design and contains no complicated mechanism subject to excessive

final connections being through flexible tubing to a special fitting and pipe extension from each cellar.

Inside of each cellar is a perforated oil-distributor pipe, located as high as possible in the cellar behind the journal and provided with a number of oil holes, including one hole in the end to furnish lubrication for the hub plate. The lubricator itself, usually mounted on the front of the cylinder casting, has an oil reservoir of sufficient capacity for long runs. Standard truck-box cellars are used, to which the pipe with graduated perforations is applied in each cellar for spreading the oil. Chokes are used when required to assure an equal distribution of oil to all cellars. Cellars are packed with waste in the usual manner.

In operating the lubricator, the handle on the engineer's control valve is turned to operating position to exhaust air from the top of the cylinder. This permits main-reservoir pressure to raise the piston which draws one pint of oil into the lower or small end of the cylinder. One minute is required for this operation, after which the handle is then returned to normal position, which applies air to the upper piston, forcing the oil through the manifold and into the cellar pipes.

On a recent endurance test, four engine-truck cellars packed with spring packing, sealed to prevent tampering and oiled exclusively by the Christy lubricator, ran 10,033 miles, after which the bearing surfaces of the spring packing were fresh and unglazed, and no surplus oil was present in the packing or in the bottoms of the cellars. Experience on the Illinois Central indicates that prior to the use of this device on certain locomotives it was frequently necessary to repack oil cellars every few hundred miles at intermediate points, and that many delays, formerly occasioned en route by the necessity of hand-oiling hot boxes, are now eliminated.

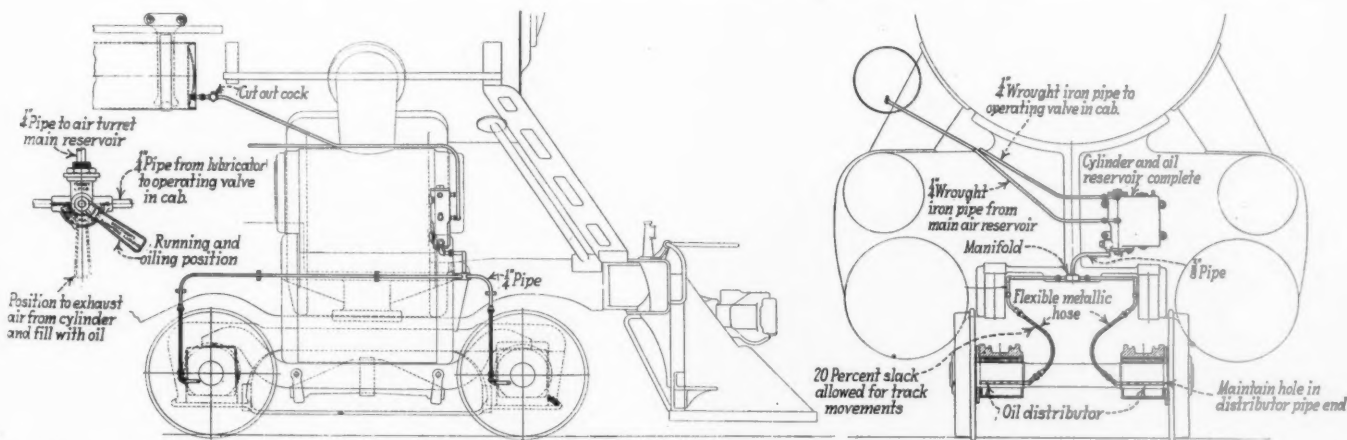


The Air-Cylinder and Oil-Reservoir Arrangement of the Christy Lubricator

maintenance or failures. It consists of an oil reservoir or container in conjunction with a cylinder containing a floating piston which, under air pressure, moves upward to draw oil by vacuum into the lower portion of the cylinder and again by air pressure is forced sharply downward to discharge the oil through tubing directly into the truck-cellar packing and to the hub plate. Truck hub-plate lubrication, as well as journal lubrication, is thus under direct control from the cab while the locomotive is in operation. The pipe connections include one $\frac{1}{4}$ -in. air line to the control valve, conveniently located in the cab, one $\frac{1}{4}$ -in. air line to the main reservoir and a $\frac{3}{8}$ -in. oil line to the cellars, the

Crane Unit With Choice of Power

A NNOUNCEMENT was recently made that the Loadmaster crane unit, manufactured by the Bucyrus-Erie Company, South Milwaukee, Wis., is available with either Case or McCormick-Deering power, and that the lifting capacity of this crane has been increased to 4,500 lb. Both engines are four-cylinder units and can be furnished for operation with gasoline, kerosene, or distillate. The McCormick-



General Arrangement of the Christy Lubricator as Applied for Lubricating Locomotive Engine-Truck, Trailer, or Tender-Truck Journals



Loadmaster Crane With Lifting Capacity of 4,500 lb. and Hoist Speed of From 38 to 75 ft. per Minute

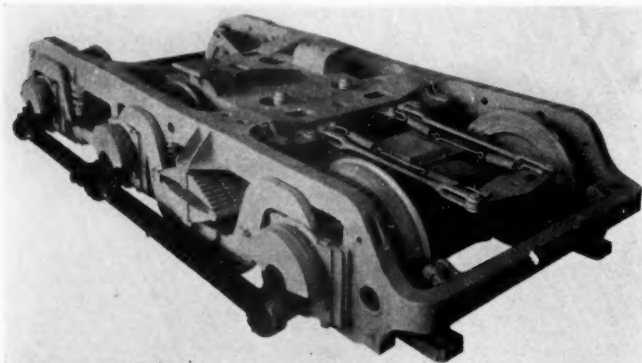
Deering engine has $4\frac{1}{2}$ -in. by 5-in. cylinders and is rated at $31\frac{1}{2}$ hp. at 1,000 r.p.m. The Case engine has $3\frac{7}{8}$ -in. by $5\frac{1}{2}$ -in. cylinders and is rated at $34\frac{1}{2}$ hp. at 1,100 r.p.m. Four speeds forward are provided with the first engine which range from 2.27 to 10.41 miles an hour, while three speeds forward are available with units equipped with a Case engine; from 2.77 to 10.95 m.p.h. The reverse speed with either of the two power units is 3.11 m.p.h.

The new Loadmaster unit has a wheel base of from $71\frac{1}{2}$ in. to 78 in. and a turning radius of from 11 to 15 ft.

The wheel base and turning radius vary according to the type of power unit installed. The purchaser has the choice of solid rubber tires, pneumatic tires or crawler mounting. In the case of the latter, the travel speeds forward range from .83 to 3.8 m.p.h. and the reverse speed is 1.1 m.p.h.

Auxiliary Locomotive With Six-Wheel Drive

THE Bethlehem Steel Company, Bethlehem, Pa., which manufactures the Bethlehem auxiliary locomotive, has developed a six-wheel type auxiliary for use under tenders equipped with six-wheel trucks. With this new drive arrangement, whereby all six wheels are coupled, the entire weight on the six-wheel truck is made available for adhesion and traction.



Bethlehem Auxiliary Locomotive With Six-Coupled Wheels

Twenty of these six-wheel auxiliaries are in service on the new Lehigh Valley 4-8-4 type fast freight locomotives. These auxiliary locomotives provide an additional 18,000-lb. tractive force at starting. The six-wheel coupled arrangement does not involve any changes in the two-cylinder steam power unit and accessories.

Hand-Operated Air Compressor

THE Westinghouse Air Brake Company, Wilmerding, Pa., has developed a hand-operated air compressor which provides a quick source of air pressure for testing, inflation and other pneumatic operations remote from the usual sources of air supply. (One railroad uses it to raise the pantograph into contact with the overhead wire when removing electric locomotives from storage.)

A variable piston stroke and handle leverage make the pump easy acting. At the start of the stroke,



A Hand-Operated Air Pump Designed for Use Where Air Pressure Is Not Available

when the pump pressure is low, the piston movement is large in relation to handle movement. At the end of the stroke, when the pump pressure is high, the piston movement is short while handle travel is relatively greater. Moreover, handle leverage increases with the stroke. As a result a maximum effort of only 37 lb. is required on the handle in pumping against 80 lb. pressure.

The cylinder is seamless brass tubing which screws into a cast-iron base. A ball inlet valve and Wabco-sealed discharge valve are compactly arranged in the base at the end of the cylinder, reducing clearance volume to a minimum and providing maximum air delivery from a total displacement of $26\frac{1}{2}$ cu. in. per stroke.

Two adjusting nuts act as a piston stop to limit the stroke, transmitting all shocks to the frame. This protects the piston and packing cup, maintaining straight travel of the cup in the cylinder and thereby minimiz-

ing packing cup wear. The cup is of Wabco material. The complete weight of the pump is 16 lb. and its height 13 in.

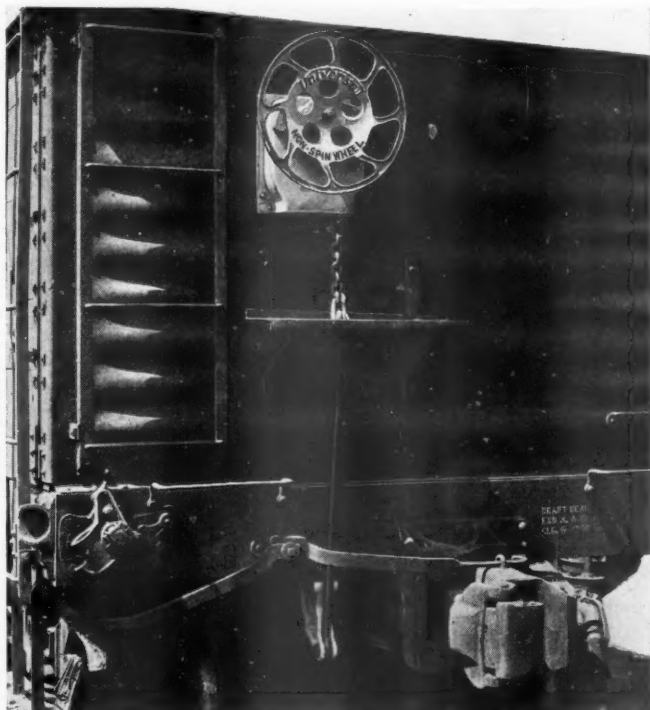
Non-Spin Wheel Safety Hand Brake

THE Universal Draft Gear Attachment Company, Chicago, has recently placed on the market a freight-car hand brake, known as the Non-Spin wheel brake, with general operating principles based on its tunnel-type passenger-car brake having a non-spin wheel, which has been in use several years. The features of this new hand brake include full power development, equivalent to that of the air brake, with one hand; easily graduated or full release, also with one hand and without back spinning of the wheel, and consequent danger to trainmen; reliability and long service life by the use of heat-treated alloy steel for all parts subject to greatest stress and wear, and ability to repair or replace the chain without removing the brake from the car.

In setting up this hand brake, a safety holding pawl functions to hold the static forces only, avoiding excessive stresses, wear and breakage. The safety pawl is in engagement at all times, preventing backward movement of the brake wheel, except when it is intended to reverse the wheel for a gradual or partial release. The safety pawl is moved to disengagement by gravity only after having been relieved of all stress.

The wheel and winding shaft function as a unit in setting the brakes, but are separated to effect full release which is positive and instantaneous. The power unit is supported and protected by a front housing of malleable iron with integral bearings and bronze bushings.

All chain is proof-tested and no special welded-end links are required to attach the chain to the brake, vertical brake rod, top rod, or to the segmental sheave



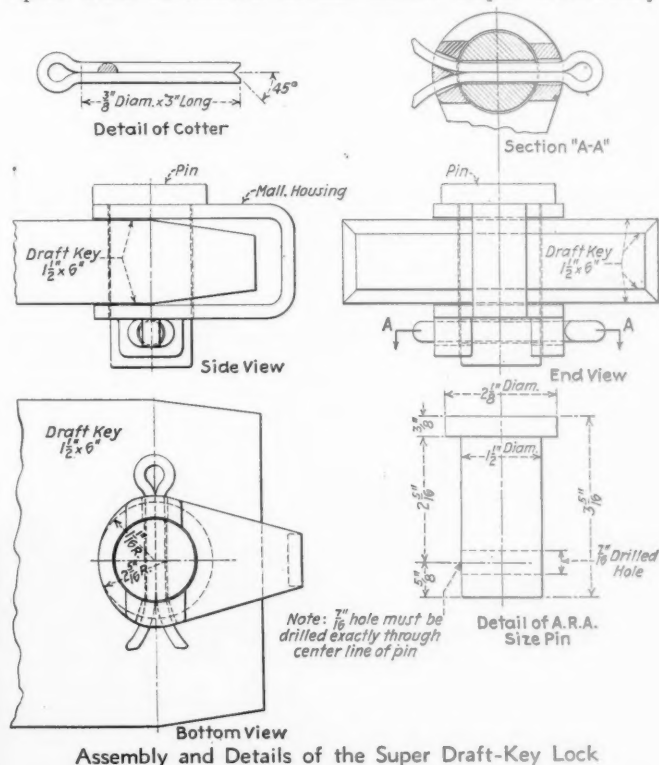
Universal Brake with a Non-Spin Hand Wheel

at the end sill. This introduces an additional factor of safety and reduces the first cost and the maintenance expense.

The principal object of the Non-Spin wheel is to prevent throwing car riders off balance or from cars when high-power brake applications (sometimes both air-brake and hand-brake power) are suddenly released. The clutch arrangement embodied in this brake makes it convenient and practical to release high power entirely, or partially, with one hand and without the usual wear and failure of parts affected by that operation.

Safety Lock For Draft-Key Retainers

WITH the object of eliminating the trouble experienced by many railroads with cotter keys losing out of the A.R.A. draft-key retainers the American Railway Products Company, Inc., 74 Washington street, South Norwalk, Conn., has developed what is known as the Cooke Super Draft-Key

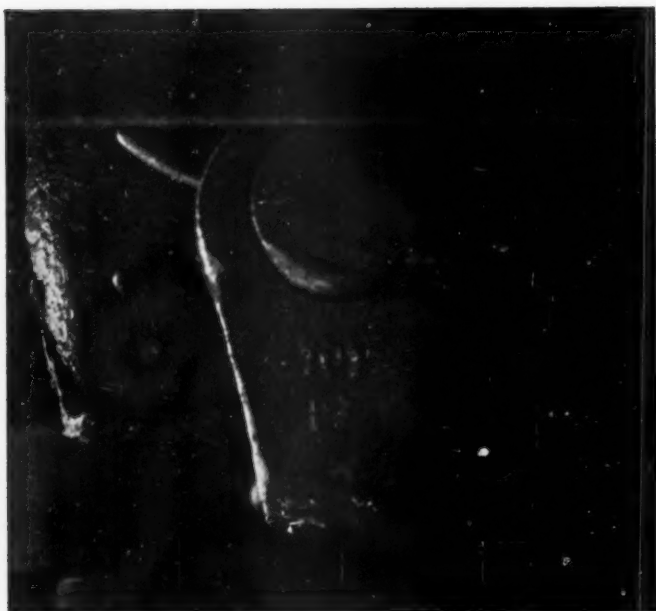


Assembly and Details of the Super Draft-Key Lock

Lock. This draft-key lock was applied to a coal car on an eastern road in October, 1930. It was in trial service for a period of 18 months. An inspection of this lock on May 10, 1932, which was made and reported by the railroad, showed it to be in as good condition as when originally applied.

Referring to the drawing, two holes are drilled at an angle of about 45 deg. so that the junction of the holes is at the center line of the cotter-pin hole. The cotter is inserted in the holes and a few taps of the hammer causes the cotter to split at the junction and bend.

The act of driving the cotter to position locks the housing, pin and cotter to the draft-key. This locking arrangement holds the cotter and pin rigid, which prevents wear and vibration. The prongs of the cotter cannot be bent together, thus the cotter cannot become



Application of the Cooke Super Draft-Key Lock

loose and fall out. This draft-key lock is designed for A.R.A. standard diameter pins. The housings are made of malleable iron.

Drastic Cut in I. C. C. Appropriation Proposed

(Continued from page 1022)

ham. "Pretty nearly, in this case, Senator," replied Chairman Porter. Mr. Porter said that everything the commission is doing can be justified but Senator Bingham said that there are "two ways of doing things." He also referred to the increase of over \$4,000,000 in the annual appropriation for the commission in about ten years.

Commissioner Lewis testified particularly as to the importance of the valuation work. When Senator Bingham asked if it might not be a good plan to stop the work until values became somewhat settled he said that while he was opposed to government operation of the railroads, "various things are occurring" and "I do not know when you gentlemen here will want to know what the values of these properties are."

Commissioner Eastman, referring to the \$1,000,000 cut made by the House in the item for the accounting bureau, said it "will, in our opinion, slaughter one of our most important departments. We do not regard it as a reduction of an appropriation but as an amputation of an appropriation." He also pointed out that many of the bureau's skilled men would be "put out in the street when it is impossible to secure work."

A group of employees of the valuation bureau has sent to Congress a protest saying that the work of the bureau would be "practically wrecked" by such a drastic cut and referring to statements by commissioners declaring valuation to be the "keystone of regulation."

Chairman Porter and Commissioner Lewis called at the White House on Tuesday.

The members of the commission will also have their salaries reduced from \$12,000 to \$10,000 by the economy bill and its entire organization will be affected by the general reduction in federal salaries for the fiscal year 1933 provided for in the economy bill.

Books and Letters . . .

Route Freight for Fast Handling

DAYTON, OHIO.

TO THE EDITOR:

Initial carriers of interline shipments, in their zeal to protect themselves with the greatest possible division of the total revenue, are going too far in many instances in routing freight so as to give themselves the long haul. While there can be no objection to this policy as long as it does not involve any delay in transit, it often happens, especially with l.c.l. freight, that as much as two or three additional days in transit are required.

In choosing between steam carriers and truck lines, one of the most important factors considered by shippers is the time element. It seems to be a "penny wise and pound foolish" policy for a billing carrier to so route a shipment in order to get the maximum revenue that the shipment will be delayed en route.

A concrete example is offered by a mid-western carrier running west from Chicago. From an important shipping center about 200 miles west of Chicago, freight to points on another carrier operating through Ohio and Indiana can be routed over two routes. The first and direct route is via Chicago and the eastern road, which gives second or third morning delivery at destination points, as through cars are run to and from Chicago, which is the only transfer station en route. The other route, giving the billing carrier a slightly longer haul, is via a branch-line connection with the eastern road southeast of Chicago. This route, serving as a belt line, is ideal for carload shipments, but for l.c.l. freight it involves several more days en route than the direct route. Shipments moving this way are first carded to Chicago, then moved back to the branch-line junction, then transferred to a car for the branch-line connection with the eastern line, transferred again to a transfer station a hundred miles beyond, and finally loaded in cars to the destination points.

Besides possibly losing the traffic, it would seem likely that any extra revenue the billing line would receive from this routing would be lost in back hauling from Chicago to the branch-line junction and in the extra cost for labor and clerical hire involved in the additional transfer.

REED W. MICHAEL.

New Book

Railway Economics, by K. G. Fenlon. 288 pages, 7½ in. by 4¾ in. Bound in cloth. Published by Methuen & Company, Ltd., London, England. Price five shillings.

Because of post-war conditions affecting the railways and attendant readjustments in the whole field of transport, the author regarded the time opportune to prepare this new survey of railway economics in the light of the present-day situation.

His concise, clearly-written treatise is thus an up-to-date re-statement of railway rate-making theories and practices, of state regulation and government ownership policies and of consolidation, financial, organization and labor problems. While these subjects are treated with special reference to railways of Great Britain there are interspersed throughout comparisons with similar practices, policies and problems in other countries.

In addition to the foregoing the book presents a critical analysis of the economic questions involved in electrification, increased train speeds, railway-operated highway services and other problems which have recently been brought to the fore in Great Britain by the reports of the Royal Commission on Transport (see *Railway Age*, March 14, 1931, page 543) and the Weir Committee on Main Line Electrification (see *Railway Age*, May 30, 1931, page 1059).

Odds and Ends . . .

Southern Pacific Statistically Proud of Safety Record

Justifiably pleased with its record for the safe transportation of passengers, the Southern Pacific, Pacific Lines, set its statisticians to work, with the astonishing result that they figured that a full load of passengers, traveling at an average speed of 40 miles an hour, could ride for 789 years on a Southern Pacific train without a fatality as the result of an accident. It has been more than 12 years since the life of a passenger was lost in a train accident on the railway's Pacific Lines. During that time a total of 464,727,460 passengers, or about four times the population of the United States, were carried an accumulated distance of 18,567,962,635 miles, or 745,661 times around the world.

Speed-Consciousness in the Soviet

Leave it to Moscow to think up startling ideas. Reports state that the Russian railroad authorities are experimenting with new types of trains which are expected to have a speed of between 135 and 200 miles an hour. Although the invention involved is shrouded in considerable secrecy, it is understood that the experiments are being conducted along three lines, one an aero-train of the Zeppelin type, another a train that will run on spheres instead of wheels, and another which will run suspended from a monorail. While differing designs for the new trains are under consideration, the ideas underlying Zeppelin construction are the basis for the invention. Each potential car is to hold 80 to 100 potential passengers, who will be picked up with potential shovels in case anything goes wrong.

Ambitious Titles

The St. Louis-San Francisco and the Chicago, Rock Island & Pacific are not the only railways which do not go to all the places which their names imply. Every one knows, of course, that the Rock Island, in spite of the last section of its name, does not reach the Pacific Coast, nor does the St. Louis-San Francisco have a terminal at the Golden Gate. But there is also the European & North American, a part of the Maine Central, which stretches no nearer to Europe than the state of Maine. There is also the Duluth, South Shore & Atlantic, which gets no closer to the Atlantic Ocean than the eastern extremity of upper Michigan. Then there is the Detroit & Mackinac, which does not enter Detroit and which has its northern extremity at Sheboygan, Mich., and also the Scioto Valley & New England, a part of the Norfolk & Western, which stops a good many hundred miles short of the terminus implied in the latter half of its name.

The Lawyers Get Busy

This question of whether Siamese twins are singular or plural and, therefore, whether they require one ticket or two when traveling on railway trains, seems to have been passed up to headquarters. At any rate, we understand that the various passenger associations have taken the matter in hand and have solicited the opinions of the legal departments of the various railways. One railway, through its law department, says that Siamese twins, although two persons and possessing individual faculties, are one inseparable human entity. They are so joined together, competent medical authorities have ruled, that when one dies the other must die. Wherever one goes the other must go; therefore, one fare is valid for their transportation. On the other hand, the legal department of another railway thinks differently. It holds that two tickets are required, since the subjects are designated as twins and have all the physical characteristics of separate individuals. They advance all kinds of arguments to prove that Siamese twins are actually two persons. For instance, records show that both the original Siamese twins were married—to different husbands. They could and probably did

own separate property. It is pointed out that a merchant furnishing clothing for two would not be satisfied with the price for one, nor is it likely that a restaurant would supply meals for the two at the price of one meal. So, it is held, Siamese twins must have two railway tickets or get off and walk. This reasoning may be perfectly sound, but it looks as though railway conductors are due to acquire a few more grey hairs whenever the Siamese twins around the country take it into their collective heads to travel.

Another Phantom Train

Apparently ours is not the only publication currently interested in railroad ghost stories. In compliance with our request for yarns of this type, B. R. W. Reacon, assistant director of publicity of the Canadian National, has sent a copy of the Canadian *Yardmaster* for April, which contains a story by Elliott O'Donnell entitled "Ghostly Happenings." One of the best ghost stories Mr. O'Donnell relates goes like this:

This is an experience which befell a relative of mine, years ago, in Scotland. He had been out all day shooting in a country with which he was not at all familiar, and a snow-storm coming on, he had lost his way. After wandering across moors and through woods, he eventually found himself in a small valley, through which a railway wound its sinuous way. There being some big rocks near the line, he decided to camp out under them until the morning. About midnight, there was a lull and a great silence succeeded the raging of the wind. The only audible sound was the weird and plaintive moaning of the telegraph wires overhead. Then there suddenly fell on my relative's ears the low, dull murmur of an oncoming train while it was still some distance away. It was a murmur that grew and deepened into the hoarse, inarticulate roar of an express train coming toward him at high speed. By and by there was a loud, shrill, imperative whistle, and presently he espied, still in the far distance, the glowing cyclopean eye of an engine. Again the whistle sounded, painful and intense, and my relative started to his feet, his pulses throbbing with a strange, unusual excitement.

Louder and louder grew the thunderous roar of the train, nearer and nearer drew its glowing eye. The line along which it was travelling was so close to my relative that he sprang fearfully back. A sudden flash, a deafening roar and rattle, and the train whizzed by, leaving in its wake a wind so icy that all the teeth in my relative's mouth at once began to chatter. Gradually the rumble of wheels grew fainter and fainter until it ceased altogether, and an impressive stillness prevailed, broken only by the unceasing moaning of the telegraph wires.

A feeling of such extraordinary uncanniness now came over my relative that, unable to bear being in the spot any longer, he decided to continue his journey. To his joy he had hardly progressed a hundred yards before he saw a house in the distance. It proved to be a farm and, after much knocking, he succeeded in rousing its occupants. As a result, he spent the rest of the night by the kitchen fire. Having left his pipe under the rock by the railway line, he set out in the morning to recover it. He found it all right, but, to his utter amazement, the line along which he had seen the train pass was covered with rust and had every appearance of not having been in use for years. Furthermore, there were no telegraph wires overhead, rocks and stones lay across the rails, and there was a feeling about the place of intense desolation and depression. So utterly mystified and scared was he that he went back to the farm and, narrating his experience of the previous night to the farmer, he asked him if he could in any way explain it.

"Saw a train on that line, did you, mon?" the farmer ejaculated. "If ye was to tell many people that, they'd say you had either been dreaming or drinking, because that line has not been in use since a bad accident occurred there about 10 years ago. I believe what ye say, however, because I saw that very same train myself exactly two years ago. Last night was the anniversary of the accident."

NEWS

P.R.R. and Reading Join Store-Door Plan

Philadelphia-Atlantic City service
will utilize the Railway
Express Agency

Collection and delivery of l. c. l. freight will be inaugurated on June 25, by the Pennsylvania and the Reading, between the Philadelphia-Camden territory and Atlantic City and Ocean City, N. J.

The new plan, which will be made effective in cooperation with the Railway Express Agency, contemplates a complete freight service from the plant of the shipper to the door of the receiving room of the consignee. Employees of the Express Agency will collect the shipments by truck and load them into the railroad cars for the haul to destination, where Express Agency trucks will make delivery direct to the consignee. In so far as the shipper is concerned, there will be but one trans-shipment, and that will be with the railroad.

In the tariffs filed with the Interstate Commerce Commission, it is proposed to make a flat charge for the entire service, from point of origin to the final designation. From Philadelphia or Camden to Atlantic City this will be 30 cents per 100 lb. To Ocean City it will be 31 cents per 100 lb. The same rates prevail in the reverse direction. There will be a minimum charge of 50 cents for a single shipment from one consignor to one consignee on one bill-of-lading.

The territories in which these l. c. l. shipments will be picked up, as well as delivered, are the corporate limits of the cities of Philadelphia and Camden, and Atlantic City and all points on Absecon Island, as well as the corporate limits of Ocean City.

The freight charges under the scale of rates for the new service will be considerably lower than those prevailing at present. For example, on a shipment of candy weighing 100 lb. the present charge from Philadelphia to Atlantic City is 45 cents. This is in addition to the costs to the shipper of delivering the shipment to the freight station, and to the consignee of taking it away. Under the new service, the charge for such a shipment will be 30 cents to Atlantic City and 31 cents to Ocean City, including all costs of pick-up and delivery. On fresh meat the rates to Atlantic City are 53 cents at present, while under the new plan they will be 30 cents for a 100-lb. shipment. To Ocean City the present charge is 55 cents, as compared with the new one of 31 cents which includes all services.

Traffic officials of both railroads pointed

out that this is an important further step in co-ordinating railroad and trucking operations to provide complete through transportation service for merchandise freight. Anticipation was expressed that the new service will prove so attractive and successful as to warrant extension of the plan between other points.

Pacific Greyhound Lines Speed Up Northwest Service

The Pacific Greyhound Lines, motor coach operating affiliate of the Southern Pacific, has established a new through limited motor bus schedule between San Francisco, Cal., and Portland, Ore., which is four hours faster than the previous schedule. The new schedule calls for a running time of approximately 24 hrs. The saving in time is made possible through the use of Nite-coaches, with sleeping accommodations, between San Francisco and Medford, Ore., the trip between Medford and Portland being by means of parlor-type coaches fitted with lunch and lavatory facilities.

States No Longer Have to Tolerate Mammoth Trucks

Commenting upon the recent decisions of the United States Supreme Court in appeals from Texas and Kansas, confirming the right of states to control "the truck problem from its dimensions and tax angles in a highly satisfactory way," the Harrisburg (Pa.) Patriot says:

"This means, then, as far as Pennsylvania is concerned that it need not tolerate 36,000 pounds of gross truck weight grinding its highways into dust, that it can reduce the length of these vehicles under thirty-three feet and its trailer combinations to less than seventy feet, while the height of them can be scaled under the present maximum of fourteen and one-half feet.

"If Pennsylvania chooses to make these reductions, its right to do so may be challenged, but when the case reaches the highest court, the verdict will be in favor of the State. . . .

"If public officials and legislators now refuse to take remedial action in behalf of other users of the highways, it is because they lack vision and courage or are ready to give preference to special interests rather than the public interest."

Railroads Ask Probe of U. S. Competition

Petition Congress to investigate
Inland Waterways Corporation
and highway aid funds

A request that government operation of inland waterway transportation in competition with the railway and government subsidies to their competitors on the highways be included within the scope of the investigation being conducted by a special House committee into the matter of government competition with industry, was made before the committee by Alfred P. Thom, Jr., general solicitor of the Association of Railway Executives, at a hearing on June 10. The committee, of which Representative Shannon, of Missouri, is chairman, was appointed by the Speaker of the House under a resolution adopted by the House after a debate which indicated that the chief interest of its proponents was in such matters as the sale of articles at Army and Navy commissaries in competition with private stores; or the practice of using military bands instead of hiring private bands.

"First," said Mr. Thom, "there is in operation today a government-owned corporation known as the Inland Waterways Corporation which is operating on the Mississippi and Warrior Rivers. The rail carriers question the propriety of the government's entering into competitive transportation operation with them. They are also opposed to being subjected to a competition wherein the competitor is relieved from important items of operating cost which the rail carriers and private enterprises generally must meet out of revenue. Specifically, the Inland Waterways Corporation not only has its highway made available and maintained for it out of the public treasury, but in addition it also operates without any requirement to pay taxes such as are assessed upon private enterprise, or to pay interest on the capital which has been given it by the government.

"The next question with respect to which we urge upon this committee the development of the facts is as to Federal contribution to the construction of state highways. It is well known that buses and trucks operating for compensation are carrying a substantial amount of traffic over such highways. These transportation agencies are in competition with the rail carriers, who own, construct and maintain their own right of way, roadbed and rails on which they operate and whose taxes contribute to the construction and

(Continued on page 1046)

R.F.C. Loans Urged for Private Industry

Houston and Woolley see benefit
of extending further aid
to the railroads

A policy by which the Reconstruction Finance Corporation would be authorized to make loans to private industry to stimulate business and relieve unemployment has been urged by various business executives who have testified before the Senate committee on banking and currency, which has before it several bills for the purpose. George H. Houston, president of the Baldwin Locomotive Works, who testified on June 11, said he favored either an authorization to the corporation to purchase equipment trust certificates or an authorization to purchase from an intermediate credit corporation securities secured by such equipment trust certificates. He said \$150,000,000 invested in railroad equipment would give employment to more than 100,000 men directly and that if long-term credit were available at reasonable cost it would be a stimulation to enterprise in the restoration of the production of capital goods. Clarence M. Woolley, chairman of the board of the American Radiator Company, said that while the loans made by the Finance Corporation to railroads have been helpful, they have not been effective in employing more workers or even in maintaining the forces of the roads without decline.

"If the railroads were to restore their personnel to a point necessary for reasonable maintenance, and were to resume normal purchases of equipment, it is fair to assume that many hundreds of thousands of men would find work in the areas and industries now hardest hit," he said. "As the United States Government has for many years past assumed a measure of responsibility for the control of the railroads, a peculiar obligation, in my opinion, rests upon us with respect thereto."

"In addition the position of our banks and insurance companies is much affected by the value of railroad bonds, which have always been regarded in this country as prime investments. The condition of the bond market, which is now practically closed to most new borrowers, has operated to check and diminish business activity, in its turn is affected more largely by the situation of railroad securities than by any other influence."

"In the light of all these facts it appears to me most important that a means be found promptly for bettering the financial position of the railroads. The plan which has appealed to me most of those which I have heard is that the Reconstruction Finance Corporation should be authorized to lend money to the railroads which they might use for the purchase of their own bonds at present depreciated prices. In this way the railroads could bring about a substantial reduction in their annual interest charges and so effect an important improvement in their financial position."

"Moreover, the purchase of these bonds

in the market would be most beneficial to the banks, insurance companies and other institutions holding railroad obligations and would bring nearer the time when the general bond market would be able to resume its function of financing the new business undertakings which are so necessary to normal business activity and a larger measure of employment."

Employees' Leagues Wax and Multiply

Organize in Alabama and plan for
N. C. and Texas—Ohio
has slogan contest

Representative railway employees of Birmingham, Ala., on May 19 held a meeting at which plans were laid for the organization of a state-wide association of railway and express employees "in an effort to remove some of the unfair conditions under which the railroads operate" and to see that present laws governing the operation of buses and trucks are enforced and that better laws to this end are enacted. The meeting was addressed by D. A. Crawford, editor of the Central of Georgia Magazine, and plans were laid to hold a mass meeting on June 20 at which time formal plans of organization will be adopted and officers elected. Similar meetings have been held and local organizations formed at Montgomery and Dothan.

Preliminary meetings, looking toward the formation of a state-wide association have been held at several points in North Carolina. At one of these H. H. Parker, president of the Railroad Employees and Taxpayers Association of Virginia, was present and outlined the method of organization which has been so successful in that state, and elsewhere. Organization of an employees' association in Texas is being promoted by H. J. Davis, of Palestine and others and preliminary steps in the same direction are being taken in a number of other states. Meantime membership in existing organizations continues to grow.

Pennsylvania has, at Scranton, an active organization called the Railroad Employees Association of Pennsylvania. Miss Genevieve La Velle, 936 Madison avenue, Scranton, is secretary.

The Ohio organization recently conducted a competition for a slogan for the association which is to be painted on tire covers of the members' automobiles. The winning slogan reads:

EQUALIZED
TAXATION—REGULATION
FOR
ALL TRANSPORTATION

The chairman of the executive committee of the Ohio association has addressed a detailed letter of protest to Congressman Brand of that state who recently wrote and made public a letter addressed to General Atterbury in which he disclosed a strong pro-truck bias. Copies of this letter were distributed widely throughout the country as anti-railroad propaganda by automotive interests.

"Highwaymania" New Plague, Says A. H. Elder

N. J. near top of list in expenditures and near bottom in
levies on road users

"When the history of the last decade or two is reviewed by future generations it will be known as the age of highwaymania," was the prophesy ventured by A. H. Elder, general solicitor of the Central of New Jersey, as, in the course of a recent address, he pointed out to the New Jersey State Taxpayers' Association how that state, considering its size, "ranks at the top of all the states in its highway extravagance."

Quoting from the National Industrial Conference Board report, "The Cost of Government," Mr. Elder cited figures showing that in 1929 over 38 per cent of all tax revenue raised by the 48 states was spent on highways. This compares with 29 per cent for education, 13 per cent for social welfare, 9 per cent for protection and 7 per cent for general governmental purposes. In New Jersey, Mr. Elder said, \$34,000,000 was spent on highways in 1929, excluding debt redemption and interest incurred on highway debt. If the latter be taken into account, New Jersey's 1929 outlay becomes \$52,000,000, an amount "exceeded by only seven states, each of them much larger than New Jersey."

These facts, he argued, would justify the Taxpayers' Association in "asking our state officials some searching questions and, in view of the seriousness of the matter we should not rest content until we get satisfactory answers." In this connection Mr. Elder, among other questions, would ask why New Jersey is making such proportionately greater expenditures for roads; whether or not the state needs an elaborate super-highway system and whether it can afford it; and whether or not a carefully planned and sound highway policy is being pursued.

Continuing, the speaker called attention to the present lack of publicity as to highway finances in New Jersey, the absence of any highway policy, the lack of highway expenditure control and the responsibility for past uneconomic expenditures. The latter was assigned to the "trading and log-rolling between politicians who were more concerned with the building of political fences than they were with the needs or the welfare of the state and its 4,000,000 people."

His discussion of highways related to the railroads, Mr. Elder said, because "the highway policy, or lack of policy, which New Jersey has been pursuing is responsible for the two chief difficulties which confront the railroads of New Jersey—on the one hand, subsidized and chaotic highway competition and on the other, confiscatory railroad taxation." While the recognized policy of the federal government, he continued, has been to knit together local railroads into a national transportation machine, the counter-policy of the states has been to

parallel practically every mile of railroad with highways. And while New Jersey has led in building highways, Mr. Elder found it has lagged for behind in taxing and regulating commercial vehicles adequately.

As to confiscatory railroad taxation, he said that New Jersey "while subsidizing commercial trucks, is collecting from its railroads one-twentieth of all the railroad taxes in the United States. The railroad tax bill in New Jersey is so out of reason that it leaves little for wages and nothing for stockholders."

In conclusion Mr. Elder advocated rigid budgetary control of all future highway expenditures; scrutiny of each road project planned by the State Highway Commission; the complete shifting of all highway costs from property owners to highway users; and proper regulation of highway carriers.

River and Harbor Appropriation Reduced

The appropriation of \$60,000,000 for the War Department for rivers and harbors work, as provided in the bill as it passed the House, was reduced by the Senate to \$54,000,000.

New York Central Reduces Salaries

Effective July 1, salaries of all New York Central employees now receiving more than \$300 monthly will be reduced by five per cent. This is in addition to cuts ranging from 10 to 20 per cent which were made effective late in 1931.

Discrimination in Providing Automobile Cars; Shippers and Carrier Fined

In the United States Court at Detroit, Mich., on June 3, the New York Central was fined \$10,000 and the DeSoto Motors Corporation \$12,000 on pleas of guilty in indictments charging rate discrimination. Forty-foot cars were provided for automobile shipments but charges were made for 36-ft. cars.

Further Reductions in Inventory

The railroads of the United States have reduced their inventories of materials and supplies by approximately \$18,000,000 since the first of the year, according to reports from 24 roads which have been received thus far by the *Railway Age* for the month of April. The value of all materials and supplies on the books of these roads, which ordinarily account for about 30 per cent of the inventories of all Class I roads, amounted to \$107,412,000 on May 1, as compared with \$113,815,000 at the first of the year, a reduction of \$6,400,000, or 5 per cent, from January.

The stocks of fuel on these roads amounted to \$6,169,000 on May 1, as compared with \$5,695,000 in January; tie stocks amounted to \$27,129,000 on May 1, as compared with \$28,799,000 in January; while stocks of miscellaneous materials amounted to \$65,985,000 on May 1, as compared with \$71,476,000 in January. Rail stocks, amounting to \$8,129,000 on these roads on May 1, were larger than

in January, but showed a four per cent reduction from March. These reductions were the result of reductions on 14 of the 24 roads for which four months' figures are available.

Expenditures for materials and supplies made in April by 38 roads for which reports are thus far available were larger than January purchases on 20 roads and larger than March purchases on 16 roads. These increases were offset by corresponding reductions in the purchases of the other roads for which reports are available, with the result that the aggregate expenditures of these roads, amounting to \$17,100,000 in April, including \$6,176,000 for fuel, \$1,280,000 for ties, \$639,000 for rails, \$9,012,000 for miscellaneous supplies showed a net reduction from the corresponding expenditures of these roads in March. The roads showing larger purchases in April than in March included the Alton, the Baltimore & Ohio, the Boston & Albany, the Central of Georgia, the Minneapolis & St. Louis, the Soo Line, the Illinois Central, the New York, Chicago & St. Louis, the New York, New Haven & Hartford and the Texas & Pacific.

Move to Halt Credit For Louisiana

The Louisiana Public Service Commission on June 7, cited railroads operating in Louisiana to show at a public hearing in New Orleans on June 21, why the commission should not adopt a rule forbidding credit transportation for the Louisiana Highway Commission and other public agencies. The rule will have the effect of bringing under the supervision of the Public Service Commission present arrangements whereby the carriers are transporting material on credit for road construction.

Luncheon to Secretary Doak

A luncheon attended by railroad presidents and labor executives was given at Chicago on June 13, in honor of Secretary of Labor William N. Doak, who was formerly national legislative agent of the Brotherhood of Railroad Trainmen. Extemporaneous and informal speeches referring to politics and the present economic condition of the country were made by Mr. Doak, by William Green, president of the American Federation of Labor, H. A. Scrandrett, president of the Chicago, Milwaukee, St. Paul & Pacific, Rufus Dawes, president of the Century of Progress Exposition, and A. J. Cermak, mayor of Chicago.

Union Pacific to Revise Life Insurance Plan

The Union Pacific's employee insurance plan, which provides free life insurance, the value of which is equal to one year's salary, will, on July 1, be revised and placed on a contributory basis, whereby employees subscribing for insurance will pay 60 cents a month for \$1,000 of insurance. The insurance will be on the basis of approximately a year's wages with a minimum of \$500 and a maximum of \$3,500, payable in case of death in 12 equal monthly payments to the beneficiary named in the employee's certificate of in-

surance; or in case of total or permanent disability in five annual installments to the employee insured. All employees who are insured on June 30 will be eligible for insurance under the new plan, as well as those who have been continuously in the service for at least one year on June 30. Thereafter those eligible will also include employees with one year of continuous service who are actively at work.

Taxation of Reimbursement Award

The Cimarron & Northwestern, a short line carrier, after being under federal control for six months in 1918, was then relinquished and under Section 204 of the Transportation act, 1920, received a reimbursement award of \$25,000, its operating deficit while competing with railroads under federal control. The railroad kept its accounts on the accrual basis.

The Supreme Court of the United States, affirming a judgment of the Court of Claims, holds that the amount awarded was taxable income for 1920, the year the act was passed, and not for 1923, when payment was received.—Continental Tie & Lumber Company v. United States. (May, 1932.) Opinion by Mr. Justice Roberts.

Pullman Exhibits Attract Thousands Already

Over 1,539,500 persons inspected the Pullman Company's display of travel comforts at various city stations during the period from January 1 to April 30. The Pennsylvania station in New York reports an average daily attendance of 1,012 in March and 3,505 in April; while 511,380 visited the display between the date of its opening on December 13 and April 30. The Union station at Chicago had the second largest total with 242,009. The April average daily attendance (except as noted) for the exhibits is as follows:

North Western Station, Chicago (May 13-17)	5,833
Pennsylvania Station, New York	3,505
Grand Central Station, New York	2,152
Union Station, Chicago	1,774
Pennsylvania Station, Pittsburgh	1,004
Union Station, Washington, D. C.	717
N.Y.C. Station, Buffalo	638
Union Station, St. Louis	395
Pullman building, Chicago	320


Freight Traffic in April


Freight traffic handled by the Class I railroads in April amounted to 21,255,361,000 net ton-miles, according to reports compiled by the Bureau of Railway Economics. Compared with April, 1931, this was a reduction of 7,456,122,000 net ton-miles, or 26 per cent, and it was a reduction of 13,644,994,000 net ton-miles, or 39.1 per cent, under April, 1930. In the Eastern district, the volume of freight traffic in April was a reduction of 22.2 per cent compared with the same month in 1931, while the Southern district reported a decrease of 32.4 per cent. The Western district reported a decrease of 28.8 per cent.


The freight traffic handled in the first four months of 1932 amounted to 89,402,100,000 net ton-miles, a reduction of 26,672,448,000 net ton-miles, or 23 per cent



"TRACTIVE POWER"

has lost its meaning..

Much is made of the "Tractive Power" of the locomotives of the country. It mounts into big figures when added up, but is misleading.  "Tractive Power" only starts

tonnage. It's "Horse Power" that determines when the tonnage gets to its destination. It's "Horse Power" that shortens the railroad; that increases revenue.  In present railroading

there is no place for "slow drags". Speeding the heavier train results in greater revenue at lower cost.  This is

being done by Super-Power Steam Locomotives. They justify their purchase by their increased earning power.  



LIMA LOCOMOTIVE WORKS • Incorporated • LIMA • OHIO

under the corresponding period in 1931, and a reduction of 51,852,190,000 net ton-miles, or 36.7 per cent, under the same period in 1930. Railroads in the Eastern district for the four months reported a reduction of 20.6 per cent, while the Southern district reported a reduction of 26.4 per cent. The Western district reported a decrease of 25.5 per cent.

Erie Opens Jamestown Station

A new Erie passenger station at Jamestown, N. Y., was formally opened on Tuesday, June 7, with appropriate ceremonies attended by President C. E. Denney and other Erie officers. A committee of Jamestown business men, headed by Marion H. Fisher, arranged the program, which included transfer of tickets, records, etc., from the old station to the new, and a luncheon and dinner given by the traffic committee of the Jamestown chamber of commerce.

Designed by the Erie's engineering department and built by Winston Bros., Minneapolis, Minn., the new building fronts on West Second street. It is of brick and stone construction, 212 ft. long by 100 ft. wide; and includes street-level passenger, baggage, express and parcel post facilities connected with low-level track platforms by stairways and elevators.

Petitions for Changes in Time Zones Denied

The Interstate Commerce Commission has denied petitions of the attorney general of Michigan and the Pennsylvania and Baltimore & Ohio railroads for modifications of its previous orders prescribing the boundaries of eastern and central standard time zones. The attorney general had asked that the entire state of Michigan be included in the eastern zone, the Pennsylvania had asked a modification to permit it to operate its Grand Rapids division on eastern time and the Baltimore & Ohio had desired to use central time on its line west of Willard, Ohio. The commission also denied a petition of the Atlanta, Birmingham & Coast to operate its entire line on central time, but the Union Pacific was authorized to except a portion of a branch line between Plainville and Oakley, Kan., from mountain time and include it in the central zone for operating purposes.

Railroads Promote Gardens

With traffic greatly reduced and large numbers of workers on part time or on furlough, the railroads generally are encouraging the planting of subsistence gardens as a practical measure of aid in the present emergency. Reports reaching the President's Organization on Unemployment Relief (1734 New York Avenue, N.W., Washington) indicate that many railroads have encouraged this type of garden over a period of years. Last year some carriers went much more extensively into this enterprise and many expanded projects are reported for 1932. R. H. Aishton, who

is a member of the President's Organization has communicated with railway executives throughout the country, and replies received by him express sympathy with the program and tell what railroads in different parts of the country have done. Several are making unused land available not only to their own low-income employees and former workers, but to citizens in general along their lines. The plans of numerous railroads are described in a bulletin now being distributed by the President's Organization, for the information of other railroads and other industrial groups.

Eight-Day Excursions All Over the South

The Central of Georgia follows the Southern with an announcement for Saturday, June 18, of round-trip tickets to any point on its system, and to numerous points on other roads, at one cent a mile. These tickets are to be good on all trains and for return any time within eight days; that is, to return as late as Sunday, June 26. The tickets are good in all classes of cars and have the stop-over privilege. A similar announcement was made by the Atlantic Coast Line at Jacksonville for travel to various points in Georgia and beyond. The eighteenth of June is the ninety-ninth anniversary of the issuing of the charter by the State of Georgia for the Central Railroad & Canal Company, the first charter issued by that state for any railroad.

The Atlanta & West Point, announcing a similar reduction includes Mobile, Pensacola and New Orleans; but will sell no reduced rate tickets for the "Crescent Limited."

Air-Conditioned Trains Between Chicago and St. Louis

Railroads operating between Chicago and St. Louis, will operate one air-conditioned train each, beginning about July 1. The cars of the Banner Blue Limited of the Wabash, including the observation-parlor car and the combination parlor-lounge-dining car will be Pullman cars equipped with the Pullman ice-type air-conditioning equipment, while the same type of air-conditioning apparatus will be installed in the chair cars and other equipment in the train by the railroad in its own shops.

The Illinois Central will air-condition its Daylight Special by installing, in its own shops, Westinghouse mechanical refrigeration in 10 cars, including coaches, parlor cars, dining cars, and observation cars. The Michigan Boulevard, consisting of parlor cars, chair cars, dining cars and coaches, and the Diamond, consisting of sleeping cars, buffet cars, chair cars and coaches, will be precooled prior to departure, the railroad employing the Carrier Corporation system of precooling.

The Chicago & Alton placed air-conditioned equipment in operation on the Alton Limited on June 15, and at the same time rubberized truck parts so as to eliminate vibration and noise. Twelve cars are air-conditioned and rubberized,

including chair cars, parlor cars, observation cars and dining cars, the conditioning equipment employed being that of the York Ice Machinery Corporation. The Alton is precooling all sleeping cars leaving St. Louis, Mo., Kansas City, Springfield, Ill., and Chicago. In rubberizing truck parts, rubber pads were placed at spring ends and where metal touches metal. The Chicago & Eastern Illinois is air-conditioning its La Salle. Lounge-chair cars and parlor-observation cars are being equipped with the Pullman Car & Manufacturing Corporation mechanical air-conditioning device, while the dining cars are being equipped with Pullman ice-type air-conditioning equipment. This company is also precooling the cars of its midnight train, the Dearborn.

Railway Employment Reduced in April

A further reduction of 9,844 in the number of employees in the service of Class I railways between March and April is shown in the Interstate Commerce Commission's monthly compilation of railway employment statistics. As of the middle of the month of April the total was 1,086,662, as compared with 1,096,506 in March and 1,093,215 in February. As compared with April last year there was a decrease of 18.37 per cent.

State Commissioners' Committee To Meet

The executive committee of the National Association of Railroad and Utilities Commissioners will meet in Chicago on June 25 to make preparations for the annual convention of the association to be held in November. It will also consider a number of proposals including one that the association co-operate in a country-wide survey as to the cost of construction of public highways and the effect thereon of motor carrier traffic, with a view to determining a fair basis of taxation. Another proposal, advanced by John F. Shaughnessy, chairman of the Nevada commission, suggests a general reduction of freight and passenger rates "so as to make them conform to present conditions."

Mixed Shipment Rates Boost L.C.L. Business on Katy Subsidiary

Tonnage figures of the Missouri, Kansas & Texas Transportation Company, motor subsidiary of the M-K-T show a gain in shipments for each of the first four months this year, while revenue figures likewise show gains for three of the four months, January revenue being slightly less than in January last year. The net gain in revenue from L.C.L. traffic during the four months, as compared with the same period last year, was more than \$10,500. The increase in tonnage of the transportation company has been steady since the beginning of the year. In January, the increase as compared with January, 1931, amounted to 106,231 lb.; in February, 391,551 lb.; in March, 980,436 lb.; and in April, 1,135,792 lb. The marked gain in April was due, in large measure, to the inauguration of

EASY STARTING FOR THE 15 CAR PASSENGER TRAIN

Economy has led to arranging fast passenger schedules so that now trains of 15 and even 18 cars are not uncommon.

This is too much train for any locomotive to handle unless it has a Booster to get the cars moving.

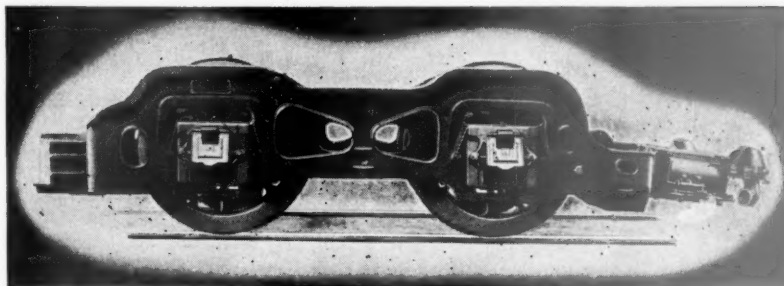
Passengers expect a smooth, jerkless start. Unless they get it, they choose a competing road for the next trip.

Booster locomotives can start the 15 car passenger train without shock and keep the good-will of the travelling public.

Sound merchandising of passenger service uses comfort for its keynote. Comfort calls for Booster locomotives. Booster locomotives bring economy of operation as well as more customers.



THE LOCOMOTIVE BOOSTER



FRANKLIN RAILWAY SUPPLY CO., Inc.
NEW YORK CHICAGO MONTREAL

what is known as the grocery mixture rate, made effective by the rail transport companies on April 15, with the approval of the Texas Railroad Commission. This tariff provision permits the mixing of numerous articles of various classifications in a single shipment of 1,000 lb. minimum weight, consigned to different receivers and distributed at destination. Its effect has been to encourage wholesale grocery houses at Dallas, Sherman, Gainesville and other points to divert shipments of this character from truck lines to the railroad and its subsidiary. One concern alone, at Dallas, consigned more than 500,000 lb. of freight to points on the Katy during the first month of operation of the new rates.

Negligence in Leaving Caboose on Trestle

The Supreme Court of the United States has been called upon to decide the question of whether a brakeman is responsible for his own safety if he steps off the steps of his caboose in the dark without knowing where he is going to land. The suit had to do with a case on the Baltimore & Ohio. A freight train having stopped, in the night-time, for the opening of a switch, so that the train could enter the passing track, the brakeman riding with the conductor in the caboose was told by the conductor to go forward and attend to a hot box which had been discovered on one of the cars. The brakeman took his lantern, walked down the caboose steps, from which he stepped into space and fell some 20 ft. into a ravine spanned by the trestle, on which the caboose, unknown to the conductor or the brakeman, had come to rest. He sued the railroad company under the Federal Employers' Liability Act., for his injuries.

The Supreme Court of the United States, reversing a judgment for the plaintiff by the Missouri Supreme Court, holds that there was no breach of duty on the part of the conductor in asking the plaintiff to alight, or in failing to inspect the place where he alighted, or to warn him of his danger. If negligence caused the injury, it is held to be exclusively that of the plaintiff.—*Baltimore & Ohio v. Berry*. (May, 1932.) Opinion by Mr. Justice Stone.

I.C.C. Examiner Recommends Charge For Loading and Unloading Service

Practices of eastern railroads in loading and unloading freight for shippers by means of cranes, derricks and other such equipment without charge or for an inadequate charge are criticized by Examiner Mohundro of the Interstate Commerce Commission in a proposed report following an investigation ordered by the commission. He recommends that the commission require respondents to cease and desist from the continuation of "these wasteful practices," and permit and require the filing of appropriate tariffs to give effect to their proposal of a uniform charge of 50 cents per ton, minimum \$5 per shipment.

"The investigation by the Bureau of

Inquiry and the evidence here of record show that respondents in this territory, through the stress of competition for traffic, have established general practices of loading and unloading freight by means of cranes, derricks and other such equipment without making an adequate charge for the service, and that in many instances no charge whatever is made," the report says. "It is shown that such services are not included in the measure of the line-haul rates. Some of the respondents have undertaken, by varying tariff provisions, to provide for such services to be rendered without charge, while other respondents concede that they have no tariff authority for these practices, which practices they have found necessary in order to compete for the traffic. These practices, on the part of many of the respondents, are in violation of their tariffs and of sections 1 (3) (6), 6 (1) (7), and 15a (2) of the interstate commerce act as well as the Elkins Act. The extent to which line-haul revenue is depleted by such practices shows that the practices have been permitted to transcend the realm of efficient and economical management. It follows, therefore, that reasonable and compensatory charges should be assessed for these services."

"Boat Trains" the Latest B. & M. Passenger Service Innovation

"Boat trains" from interior New England points in New Hampshire, Massachusetts, Vermont and Maine, operating direct to the gang planks of ocean liners, which will cruise at sea for nearly eight hours, and yet make it possible for passengers to be back at their homes the same day, will be introduced in New England by the Boston & Maine Railroad commencing Sunday, June 26.

A sort of summer-time reverse movement of the now famous "snow train" of the Boston and Maine, the "boat train" will, in conjunction with fast ocean liners, carry inland New England patrons to sea and return in a single day's excursion. The experiment, the railroad's announcement states, is the latest move by the Boston & Maine in its efforts to regain passenger traffic, and to "attract Sunday travel from congested highways."

The first trips of the "boat train" will operate Sunday, June 26, with the trains running from Rochester, N. H.; White River Jct, Vt.; Springfield and Greenfield, Mass., and intermediate points, direct to the Hoosac Tunnel docks of the Boston & Maine in Charlestown, Mass., where the Eastern Steamship Company's new liner "Evangeline" will be docked. The "Evangeline," one of the most modern passenger ships in service, will make an eight-hour cruise, the first leg along the North Shore to Cape Ann; the second, a reach out to sea to the tip of Cape Cod, and the third, a run to the entrance of the Cape Cod canal, and along the South Shore, back to the Hoosac Tunnel docks where the "boat trains" will be waiting for the return trip.

"The experiment of a 'boat train' is

a new one in New England," says the railroad's announcement. "The establishment of the 'snow train' resulted in a marked appreciation by people moving out of Boston to winter sports places in Northern New England. The experiment of the 'boat train' is an effort to establish a service providing people in Northern and Western New England with an opportunity to go to sea and return in a single day."

J. H. Hustis Asks New Deal for Railroads

A new deal for the railroads was asked by J. H. Hustis, vice-president, New York Central Lines, and former president of the Boston & Maine, in his recent address at the annual convention of the New York State Bankers' Association.

Pointing out that regulation as originally conceived and as carried out to the present time was to control monopoly of transportation and that the growth of other forms of transportation has abolished this monopoly and placed the rail carriers in a defensive competition, Mr. Hustis declared that although with the revival of business the railroads' condition would improve, their problems will still be unsolved until there is obtained equality before the law between the railroads and their competitors. He asked the bankers to aid the carriers in having removed the unfair handicaps that now exist through regulation or legislation and that prevent the carriers competing fairly with new or old forms of transportation, particularly such forms of transportation as are subsidized at public expense.

Mr. Hustis, defending the railroad against recent criticisms by Edward A. Filene, former vice-president of the International Chamber of Commerce, who, speaking recently before the New York Board of Trade, said, the railroads were "incompetent, traditionally minded and followed obsolete practices," showed that the roads were doing most of the very things that Mr. Filene had accused them in detail of not doing.

He called attention to the fact that in order to make possible the noteworthy railroad service of recent years, the railroads had expended approximately \$7,000,000,000 for capital improvements in the past ten years.

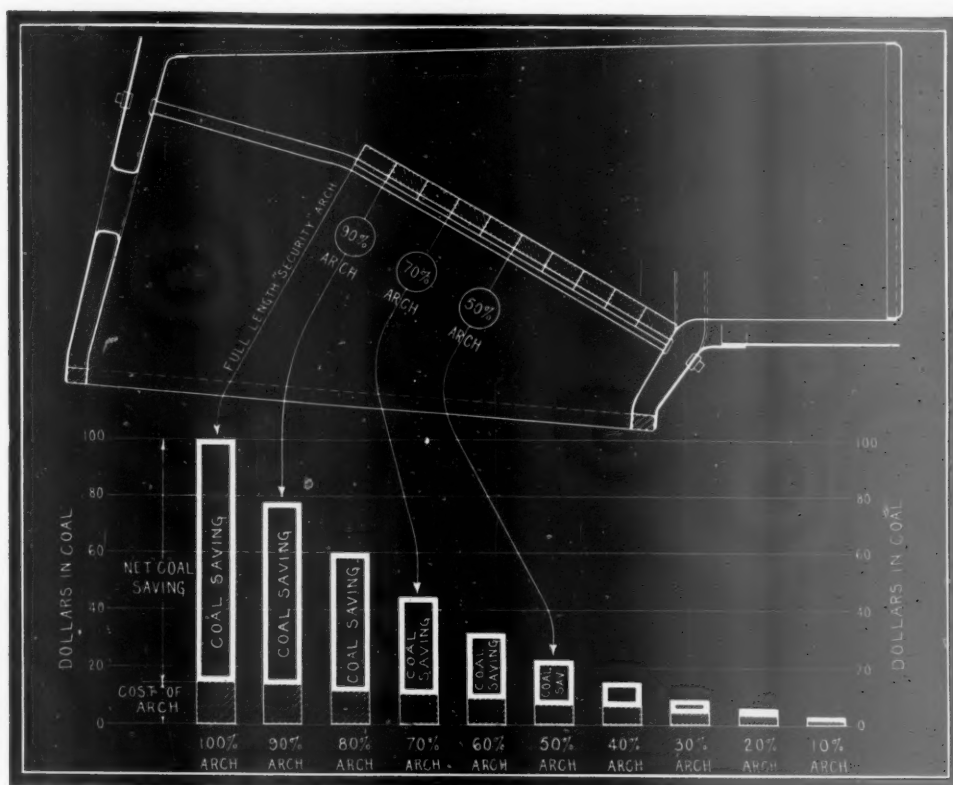
Railroads Ask Probe of U. S. Competition

(Continued from page 1042)

maintenance of the highways. In the eight-year period from 1923 to 1930, both inclusive, there was appropriated \$731,587,008 by the federal government for federal-aid-state highways.

"It is our judgment that the question of the future policy in this respect and of what return, if any, the Federal government has received from the substantial sum already appropriated should be matters for the consideration of this committee. The contribution by the federal government of substantial sums to aid in the construction of state highways from which it receives little or no return, con-

Continued on next left-hand page



THE EFFECT OF ABBREVIATED ARCHES ON FUEL SAVING

Only A Complete Arch Can Give The Maximum Economy

IN THE battle against operating expense, withholding of a dollar for Arch brick may mean losing ten dollars in fuel.

Arch economy is thoroughly proved. But only a complete Arch with every course and every individual Arch brick in place can produce the full economy.

Cutting off a course of Arch brick in an effort to reduce expenses will ordinarily waste ten dollars in fuel for each dollar saved in Arch brick—net loss nine dollars.

True economy lies in making the money-savers like the locomotive Arch work at their maximum efficiency.

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

**HARBISON-WALKER
REFRACTORIES CO.**
Refractory Specialists



AMERICAN ARCH CO.
INCORPORATED
Locomotive Combustion
Specialists

stitutes a government subsidy to a competing form of transportation."

Edward F. Goltra, of St. Louis, also testified before the committee on June 14, saying the Goltra barge line had been temporarily driven from the Mississippi river by unfair competition of the government barge line and asking an opportunity to present detailed facts. He said his

company desired to resume towing operations but that by reason of the government money available to the federal barge line it could put any private operator out of business. "Under present conditions," he said, "the government may make as low a port-to-port rate as it pleases, notwithstanding that the movement may be interstate. As the commodities we con-

template transporting will principally require port-to-port service, we know from our previous experience we will be subject to competition from a competitor having unlimited Treasury resources and, therefore, capable of making such low rates and for a sufficient period as to again throw us out of business, unless Congress acts."

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 167 steam railways, including 17 switching and terminal companies

FOR THE MONTH OF APRIL, 1932 AND 1931

Item	United States		Eastern District		Southern District		Western District	
	1932	1931	1932	1931	1932	1931	1932	1931
Average number of miles operated	242,057.83	242,195.70	60,127.14	60,208.70	46,204.74	46,129.20	135,725.95	135,857.80
Revenues:								
Freight	\$207,969,279	\$283,740,106	\$93,216,822	\$124,035,267	\$39,630,560	\$54,717,692	\$75,121,897	\$104,987,147
Passenger	31,007,794	47,267,127	18,640,655	27,422,951	3,812,995	6,190,966	8,554,144	13,653,210
Mail	8,157,761	8,811,695	3,245,442	3,399,455	1,382,277	1,485,967	3,530,042	3,926,273
Express	4,968,760	8,991,756	2,166,836	3,731,361	1,074,942	1,687,488	1,726,982	3,572,907
All other transportation	9,435,447	12,639,504	5,564,685	7,231,092	753,339	1,110,559	3,117,423	4,297,853
Incidental	5,755,998	7,643,998	3,371,155	4,166,281	759,495	1,179,927	1,625,348	2,297,790
Joint facility—Cr.	766,897	947,553	289,905	303,498	139,597	165,428	337,395	478,627
Joint facility—Dr.	245,400	282,937	89,404	75,928	19,904	30,153	136,092	176,856
Railway operating revenues	267,816,536	369,758,802	126,406,096	170,213,977	47,533,301	66,507,874	93,877,139	133,036,951
Expenses:								
Maintenance of way and structures	32,857,283	51,441,430	13,800,389	20,993,798	6,083,725	9,219,823	12,973,169	21,227,809
Maintenance of equipment	54,605,487	74,887,403	25,778,860	34,984,720	9,643,488	13,397,082	19,183,139	26,505,601
Traffic	8,535,771	10,145,637	3,330,914	3,867,535	1,554,780	1,868,299	3,650,077	4,409,803
Transportation	99,850,464	135,303,044	47,926,795	64,070,739	16,264,536	22,476,623	35,659,133	48,755,682
Miscellaneous operations	2,422,730	3,568,152	1,230,790	1,783,769	292,123	427,567	899,817	1,356,816
General	13,714,439	15,870,526	6,012,543	6,883,995	2,376,042	2,784,632	5,325,854	6,201,899
Transportation for investment—Cr.	354,813	552,618	115,534	95,916	13,029	47,191	226,250	409,511
Railway operating expenses	211,631,361	290,663,574	97,964,757	132,488,640	36,201,665	50,126,835	77,464,939	108,048,099
Net revenue from railway operations	56,185,175	79,095,228	28,441,339	37,725,337	11,331,636	16,381,039	16,412,200	24,988,852
Railway tax accruals	25,255,960	27,699,306	10,513,656	11,254,671	4,706,737	5,432,896	10,035,567	11,011,739
Uncollectible ry. revenues	80,587	66,477	27,110	26,833	9,334	12,697	44,143	26,947
Railway operating income	30,848,628	51,329,445	17,900,573	26,443,833	6,615,565	10,935,446	6,332,490	13,950,166
Equipment rents—Dr. balance	7,563,620	8,890,772	3,761,807	4,261,995	737,675	1,076,963	3,064,138	3,551,814
Joint facility rent—Dr. balance	2,661,079	2,785,105	1,497,786	1,617,808	294,052	261,274	869,241	906,023
Net railway operating income	20,623,929	39,653,568	12,640,980	20,564,030	5,583,838	9,597,209	2,399,111	9,492,329
Ratio of expenses to revenues (per cent)	79.02	78.61	77.50	77.84	76.16	75.37	82.52	81.22

FOR FOUR MONTHS ENDED WITH APRIL, 1932 AND 1931

Average number of miles operated	242,049.86	242,183.23	60,124.92	60,211.34	46,172.19	46,108.51	135,752.75	135,863.38
Revenues:								
Freight	\$846,837,509	\$1,109,624,029	\$376,697,750	\$481,636,005	\$166,407,919	\$215,753,508	\$303,731,840	\$412,234,516
Passenger	137,311,560	194,205,818	81,391,799	109,241,051	17,504,326	27,892,868	38,415,435	57,071,899
Mail	32,908,875	35,179,491	12,945,048	13,478,533	5,640,907	5,980,504	14,322,920	15,720,454
Express	18,899,810	28,825,654	8,289,737	11,642,038	3,871,111	5,404,791	6,738,962	11,778,825
All other transportation	38,739,270	48,075,609	22,871,305	27,822,522	2,839,457	3,865,160	13,028,508	16,387,927
Incidental	23,633,536	30,111,197	13,523,683	16,244,074	3,123,106	4,685,124	6,986,747	9,181,999
Joint facility—Cr.	3,160,423	3,756,850	1,078,468	1,223,450	543,917	644,408	1,538,038	1,888,992
Joint facility—Dr.	1,027,477	1,061,649	291,344	301,177	78,651	105,498	657,482	654,974
Railway operating revenues	1,100,463,506	1,448,716,999	516,506,446	660,986,496	199,852,092	264,120,865	384,104,968	523,609,638
Expenses:								
Maintenance of way and structures	123,229,354	183,268,723	53,452,771	78,020,805	25,378,936	36,524,504	44,397,647	68,723,414
Maintenance of equipment	225,557,885	299,867,142	103,948,255	139,512,773	40,901,304	53,937,420	80,708,326	106,416,949
Traffic	34,378,983	40,063,697	13,277,162	15,288,327	6,445,031	7,669,640	14,656,790	17,105,730
Transportation	425,538,779	549,474,552	202,773,675	260,553,421	69,211,366	91,632,119	153,553,738	197,289,012
Miscellaneous operations	10,514,712	14,788,649	5,314,894	7,205,979	1,338,366	2,010,268	3,861,452	5,572,402
General	55,928,225	63,244,699	24,670,756	27,552,852	9,596,665	10,939,794	21,660,804	24,752,053
Transportation for investment—Cr.	1,264,468	2,170,819	427,920	387,523	85,805	177,432	750,743	1,605,864
Railway operating expenses	873,883,470	1,148,536,643	403,009,593	527,746,634	152,785,863	202,536,313	318,088,014	418,253,696
Net revenue from railway operations	226,580,036	300,180,356	113,496,853	133,239,862	47,066,229	61,584,552	66,016,954	105,355,942
Railway tax accruals	99,883,464	108,665,122	40,730,081	42,514,743	18,843,544	21,877,179	40,309,839	44,273,200
Uncollectible ry. revenues	312,068	286,707	119,030	137,690	39,492	43,880	153,546	105,137
Railway operating income	126,384,504	191,228,527	72,647,742	90,587,429	28,183,193	39,663,493	25,553,569	60,977,605
Equipment rents—Dr. balance	28,455,971	33,002,755	14,532,625	16,502,052	2,112,237	2,880,460	11,811,109	13,620,243
Joint facility rent—Dr. balance	10,383,512	10,039,049	5,617,619	5,530,749	1,040,359	981,651	3,725,534	3,526,649
Net railway operating income	87,545,021	148,186,723	52,497,498	68,554,628	25,030,597	35,801,382	10,016,926	43,830,713
Ratio of expenses to revenues (per cent)	79.41	79.28	78.03	79.84	76.45	76.68	82.81	79.88

^a Includes \$5,521,121 increase from "Ex Parte 103." ^b Includes \$20,998,159 increase from "Ex Parte 103." ^d Deficit or other reverse items.
Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Foreign

South African Railways, 1930-1931

In contrast to a net profit of £63,491 (\$309,202) for the fiscal year 1929-1930, a net railway loss, after all charges, of £309,431, an amount equivalent (with the pound converted at its par value of \$4.87) to \$1,506,929, has been reported by the Railways and Harbors Administration of the Union of South Africa for the year ending March 31, 1931. A sizeable reduction in gross revenues and an increase of \$963,895 in the steadily-growing interest charges borne by the railways were principally responsible for the shift from a profit to a loss, as shown by the condensed comparative income accounts reprinted below:

	1930-1931	1929-1930
Operating revenues..	\$118,447,429	\$127,255,774
Operating expenses..	84,837,616	92,473,050
Depreciation	9,194,506	9,205,435
Total expenses..	\$94,032,122	\$101,678,485
Net railway operating income	\$24,415,307	\$25,577,289
Miscellaneous receipts and charges (net)...	1,096,334	786,588
Interest charges.....	27,018,570	26,054,675
Net income.....	\$1,506,929*	\$309,202

* Loss.

Revenues, for the fiscal year under review, were \$8,808,345 less than those for 1929-1930, the difference being "mainly due to the decline of traffic consequent upon the prevailing trade depression." Nearly all classes of traffic were about equally affected, the relative importance, as revealed by the following summary, remaining substantially the same as in the preceding year:

	1930-1931	1929-1930
Passenger	\$24,868,962	\$26,427,883
Baggage	3,145,884	3,387,893
Freight (exclusive of coal and livestock)	66,331,348	70,944,105
Coal	16,860,851	18,962,100
Livestock	2,905,729	2,969,000
Other traffic.....	867,181	865,686
Miscellaneous revenue	3,467,474	3,699,107
Total revenue....	\$118,447,429	\$127,255,774

In line with revenues, operating expenses were cut by \$7,635,434, part of this amount being realized by a substantial decrease in the number of employees or by changes leading to lower rates of pay for Sunday, over-time, and other special work. As shown below, the largest proportionate reduction was effected in maintenance of way expenses, and the largest absolute reduction in costs of train operation, due to reduced traffic:

	1930-1931	1929-1930
Maintenance of way and structures	\$12,455,824	\$13,928,083
Maintenance of equipment	19,806,426	21,584,288
Operating	23,870,334	26,636,996
Traffic	20,993,606	22,627,267
Executive	2,575,144	2,679,493
Obsolescence	3,048,430	2,710,681
Trucking	2,087,852	2,306,242
Total expenses....	\$84,837,616	\$92,473,050

The ability of the railway administration to effect a relatively greater reduction in operating expenses than occurred in revenues was reflected in a lower operating ratio, 79.39, as compared with 79.90 in 1929-1930. On the other hand, the failure to make an absolute reduction in expenses equivalent to the decrease in revenues resulted in a drop in net railway

operating income, as shown by the following comparative summary of revenues and expenses, including depreciation:

Fiscal year ending March 31	Gross revenues	Operating expenses	Net railway operating income
1931	\$118,447,429	\$94,032,122	\$24,415,307
1930	127,255,774	101,678,485	25,577,289
1929	127,061,767	98,854,494	28,207,273
1928	123,234,478	98,374,039	24,860,439

Passengers carried during the year numbered 76,286,588, a decrease of 4,246,267 as compared with the preceding twelve months. Most of the decline occurred in suburban services, which carried a total of 63,469,834 passengers in 1930-1931, against 67,047,311 in 1929-1930. "The decreases," the report states, "were reflected principally in second and third class bookings and are significant of the inroads made into the administration's suburban passenger traffic by competitive transport services." Including 363,986 suburban trains, 75,194 mixed trains and 6,350 rail motor cars, passenger-carrying trains operated during the year totaled 509,595, a decrease of 8,388 as compared with the previous year. These trains ran 19,084,190 miles, 642,311 less than in 1929-1930. Reduction of the Capetown-Johannesburg express service from three to two trains per week in each direction, and curtailment of other through passenger services were among the economy measures adopted during the year.

Despite a decrease of 1,028,827 tons in the amount handled, as compared with the preceding fiscal year, coal retained its position as the commodity moved in greatest volume by the freight services of the South African Railways, the 8,901,302 tons hauled constituting nearly two-fifths of all revenue freight. From the financial standpoint, however, coal traffic proved much less important, yielding only 14.23 per cent of gross income. Livestock, although moving in larger volume than in 1929-1930, also produced smaller revenues, since a decrease of 36,597 large animals more than absorbed the added income from an increase of 180,746 small head carried at lower rates. Lower revenues were realized, even in the face of higher tonnage, in the case of other freight traffic, the report's explanation thereof being as follows: "The increase in goods and mineral traffic (other than coal) was, in a great measure, a reflex of the excellent maize and sugar-cane yields and of the greater production of ores. On the other hand, there were appreciable decreases in general merchandise and other high-rated traffic, and this accounts for the shrinkage of 6½ per cent in revenue, notwithstanding a 2½ per cent increase in tonnage." The increases referred to included 889,926 tons of agricultural products (moved in a total volume of 6,078,059 tons) and 126,428 tons of minerals and ores, except coal; while the important decreases were in building materials, 244,023 tons, unclassified goods moving at special rates, 216,723 tons, and general merchandise, 94,005 tons.

Freight trains, exclusive of mixed services, were operated a total of 28,776,240 miles (30,657,958 in 1929-1930); carried an average net load of 199 tons (197 in 1929-1930), and produced 4,782,228,998 revenue ton-miles (5,002,432,292 in 1929-

1930). The average haul per ton of revenue freight was 216 miles, against 219 miles in the preceding year. Non-revenue and company freight amounting to 4,249,942 tons was handled a distance equivalent to 1,515,885,454 additional ton-miles.

Miles of open line (3-ft. 6-in. gage) increased during the year from 12,027 to 12,202, with a corresponding increase in all principal classes of rolling stock, and a growth of 2.6 per cent, or \$18,009,538, in capital investment, resulting in the increase in interest charges already noted. The number of permanent employees, on the other hand, was reduced, in the interests of economy, by 3,451, the total at the end of the year under review being 78,713. As a further economy measure, in addition to the reduction of operating expenses and passenger services previously mentioned, the publicity office formerly maintained by the South African Railways in New York City was closed, the director, C. H. Hamilton, and his assistant being transferred to South Africa.

S. A. R. highway motor services (exclusive of city trucking), were operated over a shorter total route mileage than in 1929-1930, but reported a substantial increase in traffic and a material reduction in operating deficit. Salient features of their operations are included in the following table:

	1930-1931	1929-1930
Route mileage.....	11,117	11,295
Vehicles operated (all types)	473	450
Vehicle mileage.....	5,358,138	5,286,555
Passengers carried.....	2,468,951	2,318,537
Freight handled (tons)...	242,918	168,422
Cream handled (gals.)...	872,621	974,461
Operating revenues.....	\$2,119,653	\$1,959,104
Operating expenses.....	\$2,241,832	\$2,183,426
Deficit	\$122,179	\$224,322

The report, in commenting on these results, says: "The losses can be attributed principally to the same causes as last year, namely, (a) competition by private carriers; (b) high operating costs brought about by road conditions; (c) 'one-way' traffic and (d) the operation of developmental services.

Equipment and Supplies

IRON & STEEL

THE ILLINOIS CENTRAL is inquiring for 500 tons of structural steel for bridge work in Kentucky.

THE MISSOURI PACIFIC has ordered 860 tons of structural steel for a bridge at Myrtle, Ark., from Stupp Brothers Bridge & Iron Company.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, Daylight Saving Time, June 28, for steel bars, steel shapes, steel plates, etc., for its requirements for the third quarter of 1932.

THE WABASH has ordered 500 tons of structural steel for miscellaneous bridge work, dividing the tonnage among the American Bridge Company, the McClintic - Marshall Corporation, Stupp Brothers Bridge & Iron Company and the Mississippi Valley Structural Steel Company.

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THE LOCOMOTIVE

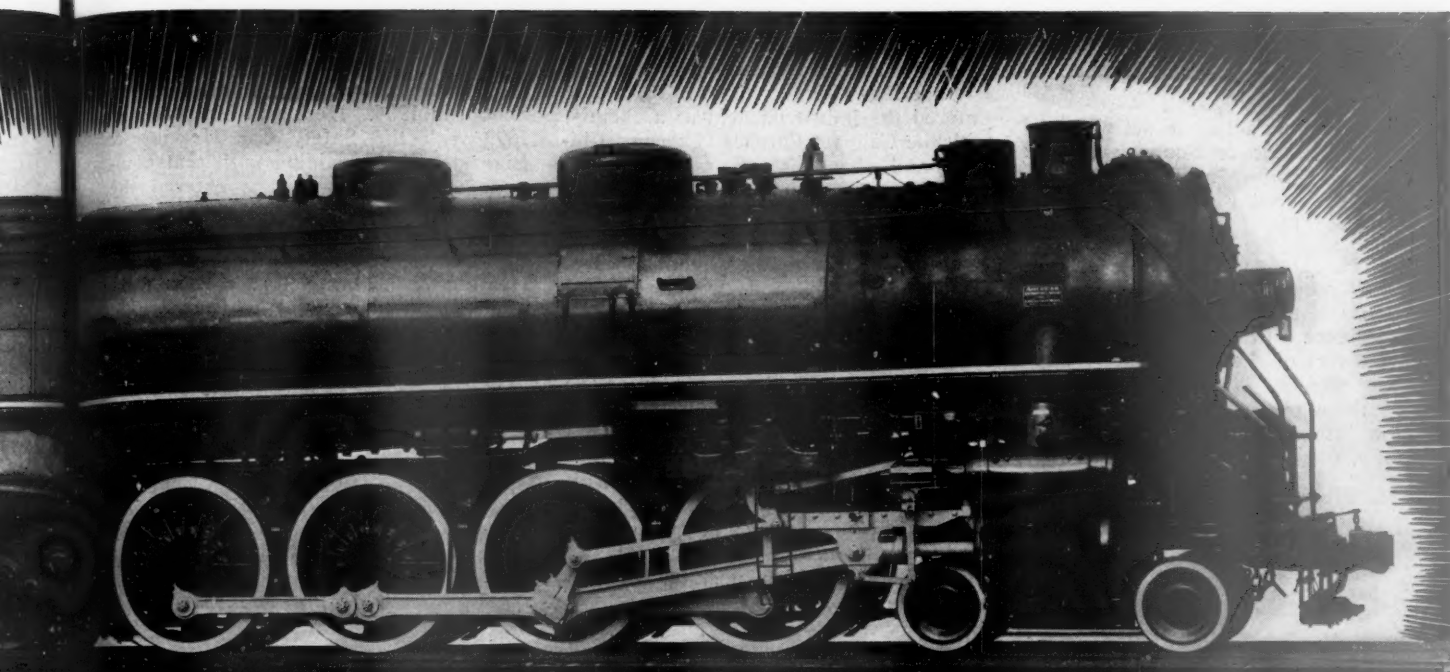
FIRST, let us examine the present condition. At the end of 1930, out of a total inventory of approximately 56,000 units, almost exactly 50 per cent was 10 years old or more. Approximately 80 per cent was over 10 years old. In 1931 orders were placed for 237 new units, and through 1932 to date orders have been practically nil. And all this in face of the knowledge that no locomotive built prior to 1925 can be considered modern.

Of course, these older engines can still haul trains, but, because of their low capacity and slow operating speeds they are turning too big a percentage of gross revenue into operating expenses.

Now these are the facts. Yet here we have a major industry like our railroads, facing competition such as they never faced before, with their motive power, which is the source of all their operating activity, in such a state of obsolescence.

Such a condition cannot be allowed to indefinitely remain in any industry if that industry expects to continue to exist.

AMERICAN LOCOMOTIVE
30 CHURCH STREET



INVENTORY

And this is not the whole story. For we positively know, and it is freely admitted, that modern locomotives under anything like normal conditions, show sufficient economy to carry not only all the necessary capital requirements but also a profit over and above this service. And they also mean a larger and better service to the public along with this more satisfactory account to the railway security owner.

A 10 year program of from 1500 to 2000 new locomotives a year would not do much more than take care of half the necessary replacements. But it would be a direct effect on the problem of unemployment. It would also be a case for the use of credit for an improvement that is imperative; that, in a word, something must be done; and where the credit so employed would positively earn its keep.

Where, if anywhere, is there a more practicable or more helpful avenue of activity for consideration by both our railroads and the Reconstruction Finance Corporation?

LOCOMOTIVE COMPANY

NEW YORK CITY

Supply Trade

The bus manufacturing activities of the **American Car & Foundry Motors Company**, heretofore at Detroit, Mich., will be transferred to the Philadelphia, Pa., plant of The J. G. Brill Company.

John H. Dodge, president of the **Lowell Wrench Company**, Worcester, Mass., has bought the **Safety Wrench & Appliance Company**, Worcester, manufacturers of the Swaco safety hopper car wrench and the Swaco car mover; these products will be manufactured in future by the Lowell Wrench Company.

J. H. Fitch, Jr., who has been appointed district sales manager of a new office opened by the **Inland Steel Company** in the Fisher building, Detroit, Mich., began work in the steel business selling tin plate for the Liberty Steel Company in 1918. When the latter company was sold to the Trumbull Steel Company, Mr. Fitch helped organize the Newton Steel Company, Newton Falls, Ohio, and served as treasurer, vice-president and a director of this company until his resignation to go with the Inland Steel Company.

Karl E. Keiling, who has been appointed assistant to the president in charge of sales and service of the **New York Air Brake Company**, with headquarters at New York, served in the purchasing department of the New York Central from 1909 until he became purchasing agent of the New York Air Brake Company in January, 1926. In October, 1929, Mr. Keiling was appointed sales manager of the latter, which position he held until his recent appointment as assistant to the president in charge of sales and service as above noted.

Charles L. Wood, who has been appointed vice-president in charge of sales



Charles L. Wood

of the **United States Steel Corporation**, New York, was born on September 11, 1873, at Youngstown, Ohio. He attended

the public schools of that city and then entered the Ohio State University at Columbus, pursuing a course in mining engineering with the class of 1896. He entered the industrial field as a chemist with the Calumet Furnace Company, Chicago, and when this company suspended operations Mr. Wood became engaged in mining engineering in Colorado and other western districts. In 1896 he became affiliated with the American Steel Hoop Company, and was appointed manager of the order department when the company moved to New York. Upon its consolidation with the Carnegie Steel Company and with the formation of the United States Steel Corporation, Mr. Wood was transferred to the sales department of the Carnegie Steel Company. He has served successively with the latter as assistant general manager of sales in charge of bar, hoop and band production, general sales manager and vice-president, which position he has held since June, 1930.

Clement V. McKaig, who has been appointed vice-president and general manager of sales of the **Carnegie Steel Company**, Pittsburgh, Pa., was born at Pittsburgh and was educated in the public schools, later completing classical and



Clement V. McKaig

scientific courses at Princeton University. Mr. McKaig entered the steel business with the old Park Works of the Crucible Steel Company, Pittsburgh, working through a number of departments to the superintendency of the bar mills. In 1908 he joined the Carnegie Steel Company and on April 1, 1929, succeeded the late I. W. Jenks as general manager of bar and hoop production, including design, engineering and marketing of all special bar mill products. When the Great Lakes Steel Corporation, Detroit, Mich., began operations later in 1929, Mr. McKaig became its vice-president in charge of sales; he now leaves that position to return to the Carnegie Steel Company.

A. Clark Moore, who has been elected president of the **Chicago Railway Equip-**

ment Company, Chicago, to succeed E. B. Leigh, deceased, was born at Washington, D. C., on January 18, 1880 and graduated from the New York Law School in 1906. He began his career in 1899 with the Safety Car Heating & Lighting Co., remaining with that company until 1906, when he entered the employ of the Western Steel Car & Foundry Co., and later McCord & Co. In 1907 he returned to the Safety Car Heating & Lighting Co., and in 1911 was appointed general manager. He held the latter position until 1913, when he was elected vice-president. In 1918



A. Clark Moore

Mr. Moore was commissioned a major in the air service, with headquarters at New York, having charge of the production of aircraft in the eastern territory. At the close of the war he returned to the Safety Car Heating & Lighting Co. as vice-president, which position he held until 1919, when he was made assistant to the president of the Globe Seamless Tube Company. He resigned from this position in August, 1921, to become vice-president of the Chicago Railway Equipment Company, which position he held until June, 1931, when he was elected executive vice-president.

OBITUARY

C. C. Hobart, president of the Hobart Brothers Co., Troy, Ohio, manufacturers of railway welding equipment, died at his home in Troy, on June 3, at the age of 77, following a prolonged illness. Mr. Hobart, a pioneer electrical manufacturer of the country, was one of the first men, after Edison, to build a complete electrical plant.

R. C. Vilas, who has been associated with the Pyle National Company, Chicago, since its incorporation in January, 1899, and who was president from 1908 to January, 1931, died suddenly at Glenview, Ill., on June 9. Mr. Vilas was chairman of the board from January, 1931 to March 14, 1931, when he resigned because of poor health.

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Construction

CHESAPEAKE & OHIO.—This company has authorized, jointly with the State Highway Department of Ohio, the construction of an overhead highway bridge at McArthur, Ohio, the railroad's share of the cost being estimated at \$43,100. It has also authorized, in co-operation with the State Highway Department of Virginia, the construction of a highway bridge over its tracks and over the James river at Eagle Mountain, Va., the company's proportion of the cost of this project being approximately \$35,150. All work, in both of these cases, will be handled by the state highway departments involved. Bids were received by the C. & O. on June 6 for the erection of an overhead highway bridge at Caskie, Va., the amount to be paid by the railroad company in this instance totaling \$30,200.

CINCINNATI UNION TERMINAL.—Bids will be closed on June 30 for the construction of a power house to serve this company's facilities at Cincinnati, Ohio, at an estimated cost of \$150,000.

ERIE.—This company has received approval from the Public Service Commission of New York of a bid submitted by the Bates & Rogers Construction Company, Inc., New York, for the elimination of the Oquaga crossing of the Erie, located on the McClure-Oquaga Lake road three miles west of Deposit, N. Y. The commission has also approved a bid received from the American Bridge Company for furnishing and delivering structural steel required by the elimination work.

LEHIGH & NEW ENGLAND.—The total cost of this company's new bridge over Bushkill creek, Stockertown, Pa., will be approximately \$23,500, of which \$15,000 will represent capital expenditure. As reported in the *Railway Age* of June 11, a contract for the erection of the bridge, a four-span steel and concrete structure, has been awarded by the railroad to F. H. Clement & Company, Bethlehem, Pa.

LEHIGH VALLEY.—Revised general and detailed plans and an estimate of cost for the elimination of the Bastian, Van Etten Junction, Westbrook, Waverly Road, Warner Street, South Hill Road and Osborne Road crossings of this company's tracks have been approved by the New York Public Service Commission. All the crossings in question are located in the town or village of Van Etten, N. Y.

PUBLIC SERVICE COMMISSION OF NEW YORK.—The New York Public Service Commission has authorized the Baltimore & Ohio to close its Tannery Road crossing in Aurora, N. Y., and has closed proceedings for the elimination of Millers crossing of the New York, Ontario & Western in Walton, N. Y. The commission has ordered that hearings be held in the proceedings for elimination of the Indian Church Road, Aurora Avenue and Olean Street crossings of the Pennsylvania, all located about two miles

west of Ebenezer station, West Seneca, N. Y., and in the proceedings for elimination of grade crossings of the former Ulster & Delaware (now part of the New York Central) at East Main and Beaver streets, Stamford, N. Y., on the Grand Gorge-Stamford-Harpersfield state highway in Roxbury, N. Y., and on the Delhi-Bloomville-Hobart county highway in Kortright, N. Y.

Financial

ALABAMA & WESTERN FLORIDA.—R. F. C. Loan.—This company has applied to the Interstate Commerce Commission and the Reconstruction Finance Corporation for a loan of \$212,025.

ATCHISON, TOPEKA & SANTA FE.—Lease of Subsidiaries.—The Interstate Commerce Commission has authorized this company to lease the Verde Valley, the Laton & Western and the Minkler Southern—all companies which it controls by stock ownership.

BESSEMER & LAKE ERIE.—Abandonment of Trackage Rights.—The Interstate Commerce Commission has authorized this company to abandon operation under trackage rights over one mile of the Baltimore & Ohio, including the joint use of the latter company's passenger station, in Butler, Pa.

CENTRAL OF GEORGIA.—R. F. C. Loan.—This company has filed with the Interstate Commerce Commission and the Reconstruction Finance Corporation a supplemental application for a loan of \$4,910,766, including the \$2,130,450 already received on its original application.

CHICAGO & EASTERN ILLINOIS.—R. F. C. Loan.—The Interstate Commerce Commission has approved an additional loan to this company from the Reconstruction Finance Corporation of \$600,000 for seven months to pay audited vouchers.

CHICAGO, BURLINGTON & QUINCY.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon 11 miles of branch line between Oregon, Ill., and Forreston.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—Annual Report.—The 1931 annual report of this company shows net deficit after interest and other charges of \$1,261,601, as compared with net deficit of \$90,252 in 1930. Selected items from the Income Statement follow:

Statement follow:			
	1931	1930	Increase or decrease
Average Mileage Operated .	646.84	646.79	+ .05
RAILWAY OPERATING REVENUES	\$11,054,802	\$14,725,077	—\$3,670,275
Maintenance of way ...	1,072,610	1,668,646	— 596,036
Maintenance of equip- ment	2,279,051	3,087,111	— 808,060
Transporta- tion	4,532,821	5,446,329	— 913,508

	1931	1930	Increase or decrease
TOTAL OPERATING EXPENSES ...	8,798,059	11,188,392	— 2,390,333
Operating ratio	79.59	75.98	+ 3.61
NET REVENUE FROM OPERATIONS ...	2,256,743	3,536,684	— 1,279,942
Railway tax accruals ..	753,371	944,181	— 190,810
Railway operating income	1,502,503	2,591,732	— 1,089,229
Net equipment rents —Dr.	613,008	736,155	— 123,147
Net Joint facility rents —Dr.	712,181	716,817	— 4,636
NET RAILWAY OPERATING INCOME...	177,314	1,138,760	— 961,446
Non-operating income	105,130	232,812	— 127,682
GROSS INCOME	282,444	1,371,571	— 1,089,128
Rent for leased roads	35,911	37,131	— 1,220
Interest on funded debt	1,416,876	1,404,988	+ 11,888
TOTAL DEDUCTIONS FROM GROSS INCOME ..	1,544,045	1,461,824	+ 82,221
NET DEFICIT	\$1,261,601	\$90,252	+\$1,171,349

DENVER & RIO GRANDE WESTERN.—Further Extension Granted in Denver & Salt Lake Case.—The Interstate Commerce Commission on June 14 granted an additional extension of time from June 15 to September 15 in which this company may comply with two of the conditions on which the commission authorized it to acquire control of the Denver & Salt Lake. These conditions are that it shall purchase at \$155 a share any of the minority stock of the D. & S. L. which may be offered it by the date set and that it shall begin the construction of the Dotsero cut-off and complete it within two years. The commission had originally set the date as March 15 but then granted an extension until June 15. On May 26 the D. & R. G. W. filed a petition for a further extension for a year, referring to the present economic situation, the inability to finance the undertaking at this time at an estimated cost of approximately \$6,000,000 for the purchase of the stock and the construction of the cut-off, and to its reluctance to apply for a government loan because of its possible inability to carry it. Oral argument on this petition was heard by the commission on June 9, when it was opposed by representatives of local interests and the D. & S. L. minority who took the position that the D. & R. G. W. was showing no real interest in completing the cut-off and bringing into use the line through the Moffat tunnel. The commission in its report granting a further three months' extension said that the company gives no assurance that it will be able to proceed with the work even if the extension asked should be granted but that it would grant the short extension in order that the parties may be afforded the opportunity to confer with a view to bringing the plan involved to fruition. Commissioner Mahaffie dissented, saying he believed further delay not justified in order to see "whether the Rio Grande can make good"

and that denial of its request would afford some other interest an opportunity to try. Commissioners Eastman and McManamy concurred in his expression.

DETROIT & MACKINAC.—R. F. C. Loan.—This company has applied to the Interstate Commerce Commission and the Reconstruction Finance Corporation for a loan of \$208,000 to pay taxes and outstanding loans.

HOBART ESTATE RAILROAD.—Correction.—The item published in the *Railway Age* of May 21 to the effect that the Southern Pacific had taken over this railroad is in error, the fact being that the Hobart Southern Railroad Company's application for a certificate to acquire and operate in interstate commerce the existing lumber railroad between Truckee and Hobart Mills was approved by the Interstate Commerce Commission on March 3, 1932, upon the express condition that within 30 days thereafter the Hobart Southern Railroad would tender to the Southern Pacific Company a 10-year option to acquire control of the Hobart Southern or its properties, upon fair and reasonable terms, subject to approval by the commission. In conformity with the commission's order, the purchase option, which entails no obligation whatever upon the Southern Pacific Company, has been tendered as provided by the commission's order and has been accepted by the Southern Pacific.

LOUISIANA, ARKANSAS & TEXAS.—R. F. C. Loan.—This company has applied to the Interstate Commerce Commission and the Reconstruction Finance Corporation for a loan of \$685,756 to pay taxes, interest, and overdue vouchers and make additions and betterments.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Notes.—This company has applied to the Interstate Commerce Commission for authority to issue \$5,000,000 of two-year secured notes dated August 1 for renewal of one-half its outstanding 5 per cent notes maturing on that date. It has applied to the Reconstruction Finance Corporation for a loan for one-half of the notes.

NEW YORK CENTRAL.—Abandonment.—This company has been authorized to abandon operation and the lessor companies, the Michigan Central and the Detroit, Toledo & Milwaukee, to abandon the line of the latter company extending from Morgan Park, Mich., eastward to Dundee, 88.8 miles.

NEW YORK CENTRAL.—R. F. C. Loan.—This company on June 9 applied to the Interstate Commerce Commission and the Reconstruction Finance Corporation for an additional loan of \$13,600,000 for three years to meet fixed charges, (interest and rentals) and taxes. The company had earlier applied for a loan of \$7,000,000 for use in connection with its West Side improvement work in New York, which it later reduced to \$4,399,000. This amount was approved by the commission on March 23 and the company has drawn \$1,500,000 of the amount from the Finance Corporation. In asking

the additional loan the company stated that it could not sell securities at this time on reasonable terms and that it has already borrowed \$64,500,000 on 5 per cent demand loans from several banks and the Securities Corporation of the New York Central. "In the case of several banks," the application said, "the legal limit has been reached and others feel that they are doing all that should be expected of them at the present time in extending banking aid to the applicant." The schedule of bank loans at 5 per cent which the banks are still carrying, accompanying the application, includes \$8,000,000 loaned by J. P. Morgan & Co., \$7,000,000 by the Guaranty Trust Company, \$11,000,000 by the First National Bank, \$10,000,000 by the Irving Trust Company, \$3,000,000 by the Chase National Bank, \$3,000,000 by the National City Bank, and \$4,000,000 by the Continental Illinois Bank & Trust Company. The total approximates the amount of all the loans at 6 per cent which had been approved by the commission for the purpose of paying bank loans and the list of banks includes two that were criticized by the commission in the Missouri Pacific case. The New York Central has recently applied to the Commission for authority for an issue of \$75,000,000 of 5 per cent bonds Series C, of which it offers to deposit such amount as may be required as collateral for the government loan, in addition to \$4,494,000 of Series B bonds.

NEW YORK, NEW HAVEN & HARTFORD.—Passes Preferred Dividend.—Directors of this company have passed the quarterly dividend of \$1.75 due at this time on its cumulative convertible 7 per cent preferred stock.

NEW YORK, NEW HAVEN & HARTFORD.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon operation of 36 miles of lines operated under lease from the Hartford & Connecticut Western in New York and Connecticut.

NORTHERN PACIFIC.—Omits Dividend.—The directors of this company have omitted action on the dividend on its capital stock due at this time.

PULLMAN COMPANY.—Tentative Valuation.—The Interstate Commerce Commission has issued a tentative valuation report as of December 31, 1931, stating the final value for rate-making purposes of the property owned and used for common-carrier purposes as \$174,200,000. The commission recently issued a final valuation as of 1919 finding a final value of \$119,500,000. The original cost of the entire property, except land, used by the Pullman Company as of December 31, 1931, in part estimated, is found to be \$235,099,917. The investment in sleeping-car property, including land, was stated in the company's books as \$249,453,125. With readjustments required by the accounting examination, the report said, this would be reduced to \$235,553,870. The cost of reproduction new of the property owned and used, ex-

clusive of land, was placed at \$292,123,860, and the cost of reproduction less depreciation at \$171,103,947. The company's depreciation reserves at the end of 1931 aggregated \$131,540,733 for equipment, equal to 58.4 per cent of its original cost, and \$2,590,682 for structural property, equal to 25.7 per cent of its original cost. The sum of \$4,200,000 was allowed for materials and supplies.

This is the first valuation report issued by the commission which has been brought down to date.

WESTERN PACIFIC.—R. F. C. Loan.—This company has applied to the Interstate Commerce Commission and the Reconstruction Finance Corporation for an additional loan of \$2,264,554 to meet its financial requirements to November 20, in place of the loan of \$759,000 for which it recently applied.

WESTERN PACIFIC.—Annual Report.—The 1931 annual report of this company shows net deficit after interest and other charges of \$2,127,162, as compared with net deficit of \$304,006 in 1930. Selected items from the Income Statement follow:

	1931	1930	Increase or decrease
Average Mileage Operated .	997.48	998.89	— 1.41
RAILWAY OPERATING REVENUES.	\$12,914,527	\$16,298,581	— \$3,384,054
Maintenance of way...	2,118,536	2,609,862	— 491,327
Maintenance of equip- ment	2,226,652	2,641,269	— 414,617
Transporta- tion	5,464,626	5,953,314	— 488,688
TOTAL OPER- ATING EX- PENSES ...	11,439,804	13,152,839	— 1,713,035
NET REVENUE FROM OPER- ATIONS ...	1,474,723	3,145,742	— 1,671,019
Railway tax accruals ..	1,106,614	1,113,279	— 6,664
Railway oper- ating in- come	367,564	2,032,004	— 1,664,440
Equipment rents	322,982	345,826	— 22,844
Joint facil- ity rents..	218,688	224,583	— 5,895
Non-operat- ing income	2,119,191	2,221,591	— 102,399
GROSS IN- COME	2,486,755	4,253,595	— 1,766,839
Rent for leased roads	3,600	3,600
Interest on funded debt	2,764,607	2,612,667	— 151,940
TOTAL DE- DUCTION S FROM GROSS INCOME ..	4,613,917	4,557,601	+ 56,316
NET DEFICIT	\$2,127,162	\$304,006	+ \$1,823,155

Dividends Declared

New York, New Haven & Hartford.—Preferred Dividend omitted.

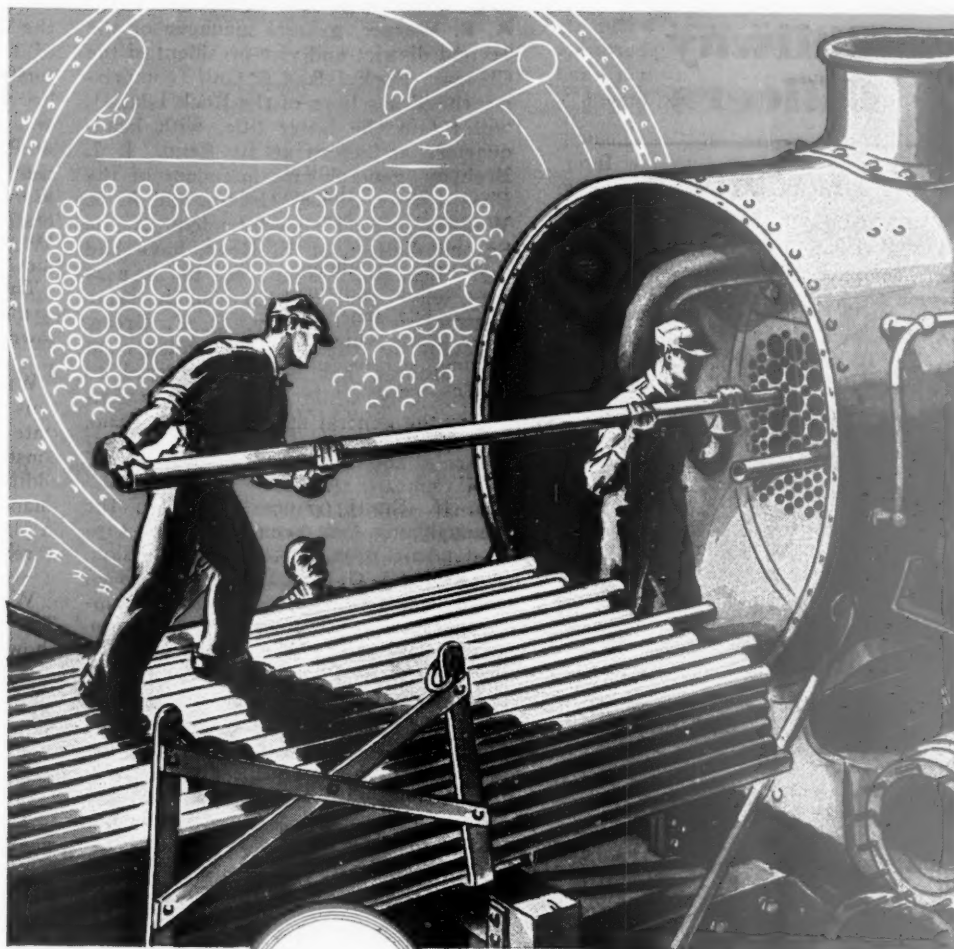
Old Colony.—\$1.75, quarterly, payable October 1 to holders of record September 17.

Virginia.—Common, \$1.50, quarterly, payable July 1 to holders of record June 18.

Average Prices of Stocks and of Bonds

	Last week	Last year
Average price of 20 repre- sentative railway stocks..	14.26	14.20 68.91
Average price of 20 repre- sentative railway bonds..	50.46	53.16 90.87

Continued on next left-hand page



TONCAN

REDUCES TUBE TROUBLES

Water difficulties are becoming progressively severe for many roads.

« Even after treatment to prevent scale formation, boiler tube pitting is prevalent. « Many large roads are combating tube troubles by using Toncan Iron. « Toncan Iron tubes have the natural corrosion resistance of iron fortified by the addition of copper and molybdenum. « Toncan Iron tubes not only will resist corrosion and pitting but they can be cold-worked without danger of subsequent fire-cracking. « Toncan Iron tubes are a contribution of modern metallurgy to the reduction of locomotive maintenance.

Toncan Iron Boiler Tubes, Pipe, Plates, Culverts, Rivets, Staybolts, Tender Plates and Firebox Sheets • Sheets and Strip for special railroad purposes • Agathon Alloy Steels for Locomotive Parts Agathon Engine Bolt Steel • Nitralloy • Agathon Iron for pins and bushings

Agathon Staybolt Iron • Climax Steel Staybolts • Upson Bolts and Nuts • Track Material, Maney Guard Rail Assemblies • Enduro Stainless Steel for dining car equipment, for refrigeration cars and for firebox sheets • Agathon Nickel Forging Steel (20-27 Carbon)



The Birdsboro Steel Foundry & Machine Company of Birdsboro, Penna., has manufactured and is prepared to supply under license, Toncan Copper Molybdenum Iron castings for locomotives.

REPUBLIC STEEL CORPORATION

GENERAL OFFICES: YOUNGSTOWN, OHIO

Railway Officers

EXECUTIVE

R. H. Ballard has been elected president of the San Joaquin & Eastern, with headquarters at Los Angeles, Cal., to succeed **J. B. Miller**.

A. J. Peavy, chairman of the board of directors of the Sabine & Neches Valley, has been elected president, with headquarters as before at Shreveport, La., to succeed **R. J. Wilson**, deceased.

John Leslie, vice-president and treasurer of the Canadian Pacific, will retire on July 1, and **E. E. Lloyd**, comptroller, has been appointed to succeed Mr. Leslie. **L. B. Unwin**, assistant comptroller, has been appointed comptroller, and **E. A. Leslie**, assistant comptroller, has been appointed deputy comptroller.

FINANCIAL, LEGAL AND ACCOUNTING

Following receivership proceedings for the Mobile & Ohio, **Carl Fox**, general solicitor, with headquarters at St. Louis, Mo., has been appointed general counsel. **E. E. Norris**, formerly vice-president in charge of traffic and operation at St. Louis, is receiver for the road. **C. B. Hayes**, vice-president, has been appointed chief financial officer and treasurer, with headquarters as before at Mobile, Ala., while **George A. Cooke**, treasurer, has been appointed assistant treasurer. **W. W. Middleton**, auditor, has been appointed chief accounting officer. The headquarters of Mr. Cooke and Mr. Middleton will remain at Mobile.

OPERATING

C. E. Irvin, general manager of the Mobile & Ohio, with headquarters at St. Louis, Mo., has been appointed chief operating officer, and **V. J. Thompson**, assistant to the vice-president in charge of operation, has been appointed assistant chief operating officer, with headquarters also at St. Louis.

J. M. Fryers, assistant superintendent on the Canadian National, at Minnedosa, Man., has been transferred to Winnipeg, Man., succeeding **W. F. Tully**, who has been transferred to Smith's Falls, Ont., to replace **C. O. McHugh**. Mr. McHugh has been transferred to Montreal, Que., to replace **J. L. Palethorpe**, who relieves Mr. Fryers at Minnedosa.

Effective July 1, the operating headquarters of the Chicago, Rock Island & Pacific will be established at Kansas City, Mo., and the offices of the general managers of the First and Second districts, at Des Moines, Iowa, and El Reno, Okla., will be discontinued. **H. L. Reed**, general manager at Des Moines, has been transferred to Kansas City with jurisdiction over the entire system.

A. B. Warner, general manager of the Second district and vice-president of the Chicago, Rock Island & Gulf (comprising the Texas lines of the Rock Island), will retain the latter title, with headquarters as before at El Reno. **J. J. Breheny**, general superintendent of the First district, at Des Moines, and **A. E. Walker**, general superintendent of the Second district, at El Reno, have had their headquarters moved to Kansas City, where they will exercise the same jurisdiction as formerly. **C. E. Green**, assistant to the general manager at Des Moines, has been transferred to Kansas City, while **E. P. Kelly**, assistant to the general manager at El Reno, will retain his headquarters at that point.

G. M. Smith, general agent of the Pennsylvania, has been appointed superintendent of the Baltimore division, succeeding **J. G. Sheaffer**, who has been transferred to Logansport, Ind., as superintendent of the Logansport division, succeeding **F. C. Wilkinson**. **F. W. Stoops**, formerly superintendent of the Toledo division, has been appointed superintendent of the Chicago Terminal division, succeeding **R. D. McKeon**, who has been appointed superintendent of the Grand Rapids division. **C. E. Adams**, who formerly occupied this position, has been appointed superintendent of the Toledo division.

Arthur A. Tisdale, general manager of the Western region of the Canadian National, with headquarters at Winnipeg, Man., will retire on June 30, after 43 years of service with that road and its predecessors. He was born on March 8, 1874, near Brantford, Ont., and entered railway service on September 18, 1889, in the local freight office of the Grand Trunk (now part of the Canadian National), at Hamilton, Ont. For the following 20 years Mr. Tisdale served this road, successively for seven years as secretary to the chief engineer at Hamilton and at Montreal, Que., for



Arthur A. Tisdale

three years as secretary to the general superintendent at Montreal, for five years as chief clerk to the manager, and as chief clerk and assistant to the fourth vice-president and general manager. He was then appointed superintendent on

the Grand Trunk Pacific (now also part of the Canadian National), with headquarters at Fort William, Ont., where he remained until June, 1915, when he was transferred to the Regina division, at Regina, Sask. The following year he was promoted to purchasing agent and assistant to the vice-president and general manager, with headquarters at Winnipeg, and in August, 1920, he was appointed assistant to the general manager at Winnipeg. On August 21, 1929, Mr. Tisdale was promoted to general manager of the Western region, which position he has since held.

TRAFFIC

George F. Macgregor, executive general agent on the St. Louis-San Francisco, at Kansas City, Mo., has retired after 47 years of service with that road.

Walter Shipley, general traffic manager of the Mobile & Ohio, has been appointed chief traffic officer, while **E. B. Farrell**, freight traffic manager, has been appointed assistant chief traffic officer. The headquarters of Mr. Shipley and Mr. Farrell will remain at St. Louis, Mo., and Mobile, Ala., respectively.

E. G. Heberer has been appointed assistant general freight agent of the Litchfield & Madison, with headquarters at St. Louis, Mo., to fill a position that has been vacant since the promotion late last year of **W. T. McNamara** to general freight agent. **W. W. Smith** has been appointed to the newly-created position of general agent at San Francisco, Cal.

J. L. Power, chief clerk in the office of the general traffic manager of the Illinois Terminal, at St. Louis, Mo., has been promoted to the newly-created position of general agent at the same point. Mr. Power will assume the duties formerly handled by **H. C. Leutert**, assistant general freight and passenger agent at St. Louis, whose death on April 27 was noted in the *Railway Age* of May 7. The position of assistant general freight and passenger agent has been abolished. **L. H. McGarry**, rate clerk at St. Louis, has been appointed to the newly-created position of general agent at Kansas City, Mo.

ENGINEERING AND SIGNALING

Porter Berryhill has been appointed chief engineer of the Alaska Railroad, with headquarters at Anchorage, Alaska, to succeed **C. H. Holmes**, whose death on April 9 was noted in the *Railway Age* of April 23.

J. M. Fox, division engineer of the Cleveland division of the Pennsylvania, with headquarters at Cleveland, Ohio, has been transferred to the Indianapolis division, with headquarters at Indianapolis, Ind., to succeed **C. O. Long**, who has been appointed assistant division engineer of the Middle division, at Altoona, Pa.